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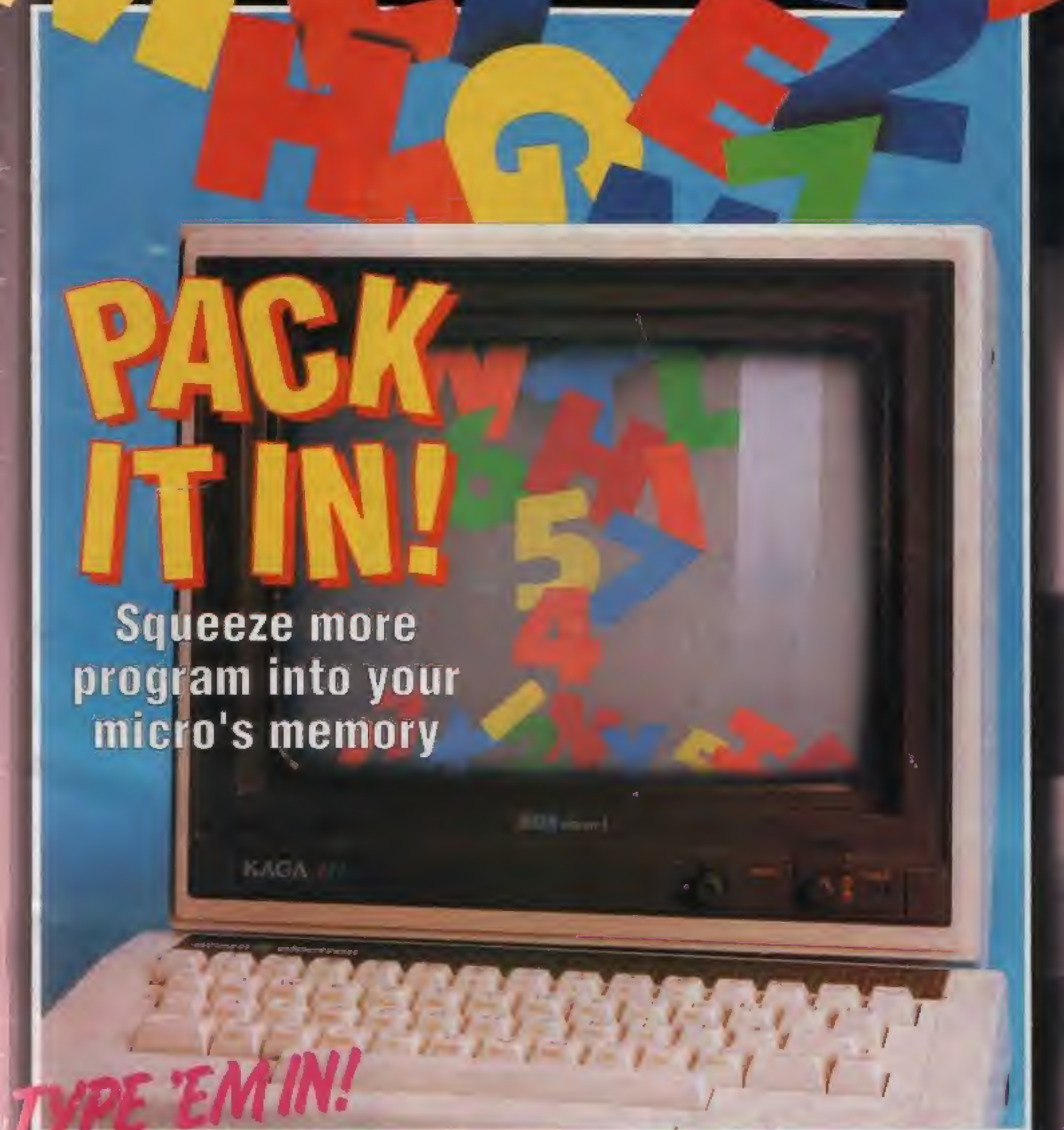

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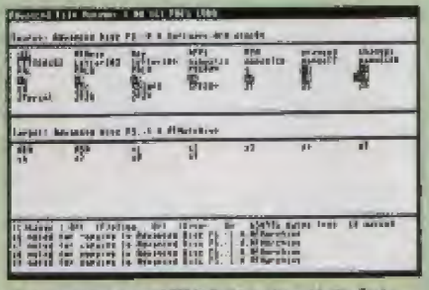

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# CONTENTS

## Cover Story


**10 Packer**

*Now you can squeeze more into your micro's memory with this useful Basic program shrinking routine*

**7 News**

*A look at all the latest developments in the ever-changing world of the Electron.*

**9 Time Warp**

*Barry Woods casts his mind back to 1985 and reports on the exciting developments in the world of the Electron at that time.*

**14 Software**

*It's not unlucky for Sam: A look at the latest compilation of games to be released for the Electron.*

**17 Gallup**

*Find out the positions of your favourite games in this up-to-date chart.*

**18 Dice**

*A game of chance and skill that's both fun to play and educational.*

**20 Display**

*Using your Electron and printer, here are two different ways for you to produce large banners.*

**26 Radium**

*Can you protect the Gort Empire from attack in this fast-action, sideways scrolling arcade game?*

**30 Cheats**

*We continue the Electron User exclusive series with more modifications from:*

- ✓ *Hopper*
- ✓ *Hunchback*
- ✓ *Imogen*
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**34 Pendragon**

*Our resident adventure wizard provides a host of hints, tips and clues for popular adventures.*

**37 Got it!**

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**41 Micro Messages**

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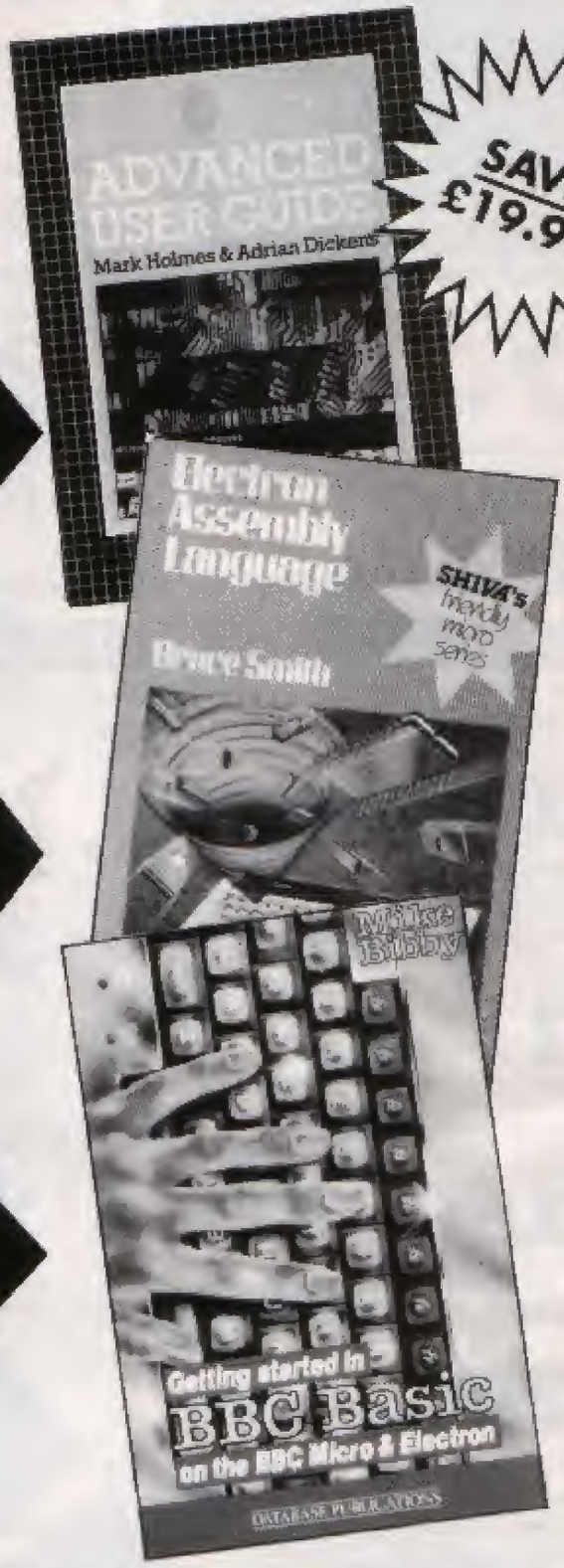


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# Disc games hopes dashed

ELECTRON owners are continuing their campaign for more of the latest games to be put onto disc, but a survey conducted by *Electron User* has revealed this to be a vain hope.

Major players in the Electron field cite compatibility problems and the restrictive size of the Electron market for their unwillingness to launch into disc conversions on new packages.

Surrey-based Pres (0276 72046) is the most likely source if its current licensing agreement with Superior Software can be extended to take in the newer titles.

Pres has already bought the licences to convert 50 Superior games to disc (see *Electron User*, February). While these have been well received, they are in the golden oldie vein including such favourites as Frak, Qwak and Killer Gorilla II.

Selling eight games per disc, the company will soon have used up this initial batch of titles, but boss John Huddleston says he would like to recoup the money spent on those before possibly extending his disc operation to newer games.

On offer from Superior are titles such as Barbarian, Last Ninja, Predator and Fire Track which while they are not that new are at least a step in the right direction.

"It is possible that we could take these up for conversion to disc in the future but I have no definite plans to do so at present", said John.

At Superior (0652 58585), Steve Hanson scotched any hope of the company releasing disc-based games.

"The reason we do not do disc versions is that there are so many compatability problems", he said.

"We would have to produce 3.5in and 5.25in versions to fit the available drives. Bringing out two types of format for a limited market then facing compatability problems just takes up far too much time.

"We think it is better to sell the rights to someone like Pres who produces the disc drives. Some of our more up-to-date games are on offer but are subject to further negotiations with Pres".

Lack of market support was also cited by Colin Courtney at Tynesoft (091-414 4611) who produced a trial 3.5in disc version of Circus Games.

"It was not very successful", he admitted. "It is the same old story as with the BBC Micro. Because there is no common format on the Electron disc, the cost of the job makes it just not worth doing".

The only Electron title in production at Tynesoft is a cassette version of Beverly Hills Cop which was due earlier in the year but had to be put aside because of development pressures. It was expected to be out by the middle of May and is Tynesoft's last Electron title.

A spokesman for The 4th Dimension summed up the general feeling.

"Most of the new titles I know about which were brought out on disc were flops", he said. "Its a costly exercise and there is just not the market to support it".

## Bytes with bite

**REMEMBER the latest American craze we told you about in the February issue of Electron User? Well Computer Critters are now here in the UK for the Electron owner who wants some really user friendly "softwear".**

**Unveiled at the Which Computer? Show, the critters consist of furry heads, arms and legs which attach to your machine by velcro. They turn your computer and monitor into a rabbit, teddy bear, bulldog or the dragon pictured here. Available from Datronlech (0252 313155), computer critters cost £29.**

## Conversions are his business

WHAT have Electron computers and the North East village of Bedlington got in common? The answer is Peter Scott, the country's strongest contender for the title "Mr.Electron".

From his village home, the 23-year-old Geordie has provided Electron users with more original and converted games than anyone else.

Through his company, Dylan Games, he has been responsible for converting such Electron favourites as Barbarian I and II, Last Ninja I and II, Ballistix and Predator to the Electron and for original games which include the popular Spy Cat and Superior Soccer.

His latest project has been the Superior Software conversion of Infogrames hit Hostages and he will soon move on to Sim City.

Peter's ongoing affair with the Electron started during his schooldays.

"I had had a lot of other computers but when I got an Electron I decided to stick with it. It was very reliable and the only one which didn't break down", he said.

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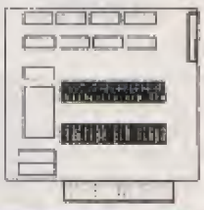

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# TIME WARP 1985

**Barry Woods trips back in time to 1985 and reports on the Electron market**

WHOOSH! Here I am, back in June 1985 in the pilot's seat of my time machine so let's step out and find out what's currently making the headlines in the world of the Electron.

Summer is here and our faithful micro is just reaching its peak with software and hardware developers and suppliers busy beavering away turning out games, utilities and peripherals for a hungry market.

"Educational software galore for the Electron", proclaimed the headline on Electron User's news page.

A nationwide investigation by Acorn had recently revealed that there were already around 1,000 educational software titles for the Electron.

This survey was carried out in the wake of mounting criticism from concerned parents who had been unable to find suitable programs for their children.

The problem seemed to be poor distribution, with retailers unwilling to stock educational software.

Much the same situation prevails even now, as a vast amount of Electron software has been produced over the years, but little of it is available in the shops and buyers must resort to mail order.

Mini Office was making headline news too, as the budget business package had been selected by W.H. Smith as the ideal software to use in its mobile training classroom.

As well as training W.H. Smith's staff, Electrons were also being used to entertain, educate and train severely handicapped and disabled residents of Cheshire Homes. On the hardware front, Cumana was leading the way with its latest disc interface, which had been recently reduced in price to £224.15 from £269.90.

Those prices seem highly inflated by today's standards, and the disc filing system, though otherwise excellent, was incompatible with the ADFS or DFS so buyers were out on a limb.

One of the first roms to be produced for the Electron was a graphic and toolkit rom called Addcomm from Vine Micros and reviewed in this issue.

It boasted extended graphics commands such as CIRCLE, FILL and ELLIPSE, and utilities to search and replace variables in program listings and compact code.

The software market was thriving with recent releases such as Tempest, Twin Kingdom Valley (five years after it was released, Pendragon still receives queries about this adventure), Free Fall and the unusual The Complete Cocktail Maker from Acornsoft. With this last program you could browse through dozens of recipies for cocktails and even design your own.

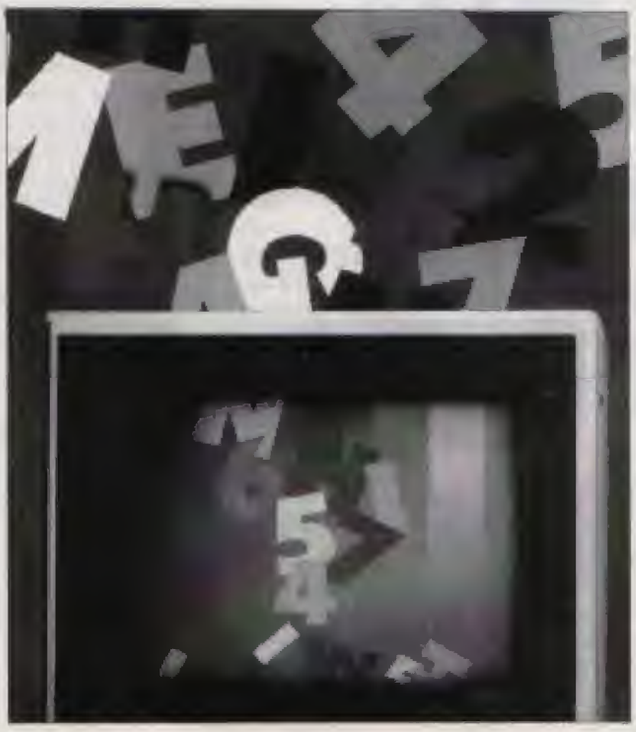
By June 1985 Electron User had grown up slightly and partly abandoned its early comic style youthful image.

In the June issue was a type-in demonstration of the operation of a four stroke combustion engine, a machine code disassembler and an interesting string manipulation utility.

Plus a host of arcade and educational games to enter and play.

● *Five years ago this month the Electron was at its peak and as we have seen, it was to stay there for several years. It is now time to look even further back, so I'll set my time machine's controls for the month Electron User was launched, way back in 1983. Can you remember which month it was and what was in that very first issue? Wait until next month to find out!*

IT'S UTTERLY INCREDIBLE...



# PACKING 'EM IN!

**You can squeeze a lot more bytes into your Electron with this quite crafty compression utility from Chris Nixon**

**YOU have probably come across various types of Basic program compression utilities before now, but here's one which can really save you some valuable space.**

Most Basic program packers rely on a large number of unnecessary spaces being added by the programmer for the sake of clarity. These are then searched for and stripped out, along with any REM statements found.

However, often no attempt is made to intelligently compress the program structure itself, which is where PACKER comes in. The routine also performs the relatively simple function of space stripping, but REMs are left untouched, for reasons explained later.

Spaces are very easy to remove from a Basic program. In fact BBC Basic needs no spaces at all between commands – even after an IF clause. Therefore it is a simple matter to check for and remove all spaces either preceeding or following a Basic token. The first real bonus is that any colons found immediately after a REPEAT command will be removed – as you probably know, there is simply no need for REPEAT to be separated from any following statement.

Secondly, all semi-colons immediately before a TAB or quote mark will also be removed. You may be surprised that these are usually completely unnecessary in such positions, but a large number of BBC programmers learn their skills on other – less forgiving – micros.

However, this does cause problems when the very unusual occurrence of a semi-colon inside quotes and immediately before the second quote – "Please Wait:" or ASC";" are examples. The semi-colon will be mistaken for a print format character – like in PRINTTAB(0,0);"HELLO" – and therefore removed.

If you run Packer on itself, it will in fact fail because of this problem – the original line 350 contains the command ASC";" and this ends up as ASC"" in line 250 of the compacted version. You can either put back manually the few semi-colons that are incorrectly removed or you can alter the program to leave them all in.

The change needed to prevent semi-colons being stripped is simply to insert a new line:

```
705 RTS
```

All characters removed by Packer are detailed in Table I.

The main difference between this and other program compression utilities is Packer's approach to compressing the actual program structure itself.

Nearly everyone writes programs using shortish lines, rarely approaching Basic's upper limit of 238 characters a line. This results in using more memory than is strictly necessary, because each extra line needs four extra bytes at the start – the line number (two bytes), line length and &0D line start marker.

Packer will go through any Basic program joining together as many adjacent lines as possible, while safely preserving the program logic and syntax. The bytes gained by this method are quite impressive – a 10k program will typically yield a gain of 1500 to 2000 – nearly 20 percent of the original program size.

To ensure that a program's logic remains intact, Packer has to know when it can safely join two lines together. For instance a line containing an IF statement cannot be joined to the next one – doing so would result in the statements on that part of the line only being executed in future if the IF clause is found to be true.

Perhaps the most complex part of Packer is the check it makes to ensure that there is no GOTO or GOSUB reference to each line

IT'S ABSOLUTELY AMAZING...

## Characters removed by Packer

- All spaces before and after all Basic tokens.
- Colons after all REPEAT tokens.
- Semi-colons before all TAB tokens.
- Semi-colons before all quote marks.

*See note in text about semi-colons*

*Table I*

before being joined – or concatenated – to the preceding line. If GOTOs and GOSUBs were simply ignored, the packed program would be unable to find some program lines as they will be mixed in to the middle of others. The program would then halt with the error *No such line*.

The whole program is therefore checked from start to finish for such a reference to any line about to be concatenated. Each GOTO or GOSUB line number is in the form of a token &8D, and the number is itself stored in a highly tokenised state using three bytes. The result is a four byte number which must be decoded before it can be checked.

A very sluggish compression time would be the result, but this is in fact minimised by performing the inverse of this process – the number of the current line is first tokenised according to Basic's rules, and a fast search is made for a matching set of four bytes

```
  480 .getchar:LDY charptr:LDA (ptr),Y
:RTS:.findlead:INC charptr:JSR getchar
:DEC charptr:CMP #&8D:BCS leadfound:SE
C:RTS:.leadfound:JSR compress:CLC:RTS:
.findtrail:LDA charptr:CMP #4:BNE trai
l1:RTS:.trail1:DEC charptr:JSR getchar
  600 INC charptr:CMP #&8D:BCS trailfo
und:RTS:.trailfound:JMP compress:.find
colon:DEC charptr:JSR getchar:INC char
ptr:CMP #&F5:BEQ colonfound:RTS:.colon
found:JMP compress:.findseml:INC charp
tr:JSR getchar:DEC charptr:CMP #&8A
  730 BNE findquote1:JMP compress:.fin
dquote1:CMP #34:BEQ compress:RTS:.comp
ress:DEC len:LDY #3:LDA (ptr),Y:SEC:SB
C #1:STA (ptr),Y:CLC:LDA charptr:ADC p
tr:STA ptr1:LDA ptr+1:ADC #0:STA ptr1+
1:.squash:LDY #1:LDA (ptr1),Y:DEY
  830 STA (ptr1),Y:INC ptr1:BNE skip:I
NC ptr1+1:.skip:LDA ptr1+1:CMP top+1:B
NE squash:LDA ptr1:CMP top:BNE squash:
SEC:LDA top:SBC #1:STA top:LDA top+1:S
BC #0:STA top+1:RTS:.setup:LDA #0:STA
ptr:LDA &18:STA ptr+1:RTS:.pack
  940 LDY #1:LDA (ptr),Y:CMP #255:BNE
cont:JMP &FFE7:.cont:LDY #3:LDA (ptr),
Y:STA len:CLC:ADC ptr:STA ptr1:LDA ptr
+1:ADC #0:STA ptr1+1:LDY #1:LDA (ptr1)
,Y:CMP #255:BNE cont1:JMP &FFE7:.cont1
:LDY #2:LDA (ptr1),Y:STA lo
```

*A section of Packer after packing – compare it with the listing*

through the program.

Throughout the whole process Packer obeys a detailed set of concatenation rules, which ensure that you can confidently let it loose on your most complex and tightly-written programs. These rules are summarised in Table II.

Type in the listing and save it under any suitable filename other than PACK. When run, a machine code program called PACK – which occupies most of the 1k from &900 to &CFF – is saved to disc or tape.

To use Packer, load the program you wish to compress. Then, if PACK is already in memory it can be run by entering:

```
CALL &900
```

Alternatively, you can type:

```
*RUN PACK
```

to load and run the routine from disc or tape. From disc, you can use just

```
*PACK
```

if you know that none of your roms will respond.

From the on-screen display, you will notice that Packer makes two passes over your program as it runs. Pass one is to remove spaces and the other characters shown in Table I, and a message to that effect will be displayed.

Pass two is the concatenation stage, and each line number being considered will be displayed on the screen so that you can monitor Packer's progress.

The utility will take some time to compress large programs – 4.5 minutes for a 20k program is typical. But the speed of compression increases rapidly for smaller programs, due to the smaller amount of memory that Packer has to shunt downwards with each line encountered.

As mentioned earlier, REMs are not removed because the utility is by nature fairly slow anyway. Also, removing a – perhaps lengthy – REM statement would really slow Packer down.

Generally speaking, a REM is easily enough spotted and removed manually – this way the presence or absence of REM statements is left up to the user's discretion.

It is worth noting that program compression is much more than just a

**PACKER works on any Electron and BBC Micro, including models A, B, B+, Master 128 and Master Compact. It works with any version of Basic up to and including Basic 4 – Master 128 – and Basic &40 – Master Compact.**

## Packer's line-joining rules

- Do not join lines beginning with DEF, DATA or REM.
- Do not join a line onto a line beginning with DEF, DATA or REM.
- Do not join lines lines referred to else where with GOTO or GOSUB.
- Do not join a line onto a line containing an IF, * or REM.
- Do not join a line if it would result in a combined line length greater than 238 characters.

*Table II*

memory-saving gimmick: Shorter programs run appreciably faster than longer ones due to there being less work for the Basic interpreter to do in response to commands like GOTO, for instance.

A point worth noting is that packer will not concatenate lines on to the end of a * command, for obvious reasons. However, as the * symbol is not a token, Packer will be confused by its usage as a multiplication operator, or inside quote marks as a printed string. Therefore some lines will be left alone which otherwise are quite legal to concatenate – you can search for these yourself and join them manually if necessary.

So using Packer you can write programs in a very readable form – using short lines – and once working you can shorten it. But remember to keep a copy of the original, as future changes will be difficult to a packed program.

```
   10 REM **********************
   20 REM * BASIC Packer 0.3  *
   30 REM *  by Chris Nixon   *
   40 REM * (c) Electron User *
   50 REM **********************
   60 REM
   70 MODE7:ptr=&70:ptr1=&72:ptr2=&74
   80 len=&76:len1=&77:num1=&78:num2=&
79
   90 num3=&7A:lo=&7B:hi=&7C:tenthou=&
70
  100 thou=&7E:hund=&7F:ten=&80:num=&81
  110 size=&82:charptr=&84:top=&12
  120 FORPASS=0TO2STEP2:P%=&900
  130 COPT PASS
  140 LDA #intro MOD 256:STA &50
  150 LDA #intro DIV 256:STA &51
  160 JSR message:JSR &FFE7
  170 LDA #mess1 MOD 256:STA &50
  180 LDA #mess1 DIV 256:STA &51
  190 JSR message:JSR setup:JSR strip
  200 LDA #13:JSR &FFEE
  210 LDA #mess2 MOD 256:STA &50
  220 LDA #mess2 DIV 256:STA &51
```

➤

```
230 JSR message:JSR setup:JMP pack
240 .strip
250 JSR getlen:BCC doline:RTS
260 .doline
270 JSR getchar:CMP #32
280 BNE checkcolon:JSR findlead
290 BCC nextchar:JSR findtrail
300 JMP nextchar
310 .checkcolon
320 CMP #ASC":":BNE checksemi
330 JSR findcolon:JMP nextchar
340 .checksemi
350 CMP #ASC";":BNE nextchar
360 JSR findsemi
370 .nextchar
380 INC charptr:LDA charptr:CMP len
390 BCC doline:CLC:ADC ptr:STA ptr
400 LDA ptr+1:ADC #0:STA ptr+1
410 JMP strip
420 .getlen
430 LDY #1:LDA (ptr),Y:CMP #&FF
440 BNE notend:SEC:RTS
450 .notend
460 LDY #3:LDA (ptr),Y:STA len:INY
470 STY charptr:CLC:RTS
480 .getchar
490 LDY charptr:LDA (ptr),Y:RTS
500 .findlead
510 INC charptr:JSR getchar
520 DEC charptr:CMP #&8D
530 BCS leadfound:SEC:RTS
540 .leadfound
550 JSR compress:CLC:RTS
560 .findtrail
570 LDA charptr:CMP B4:BNE trail1:RTS
580 .trail1
590 DEC charptr:JSR getchar
600 INC charptr:CMP #&8D
610 BCS trailfound:RTS
620 .trailfound
630 JMP compress
640 .findcolon
650 DEC charptr:JSR getchar
660 INC charptr:CMP #&F5
670 BEQ colonfound:RTS
680 .colonfound
690 JMP compress
700 .findsemi
710 INC charptr:JSR getchar
720 DEC charptr:CMP #&BA
730 BNE findquote1:JMP compress
740 .findquote1
750 CMP #34:BEQ compress:RTS
760 .compress
770 DEC len:LDY #3:LDA (ptr),Y:SEC
780 SBC #1:STA (ptr),Y:CLC
790 LDA charptr:ADC ptr:STA ptr1
800 LDA ptr+1:ADC #0:STA ptr1+1
810 .squash
820 LDY #1:LDA (ptr1),Y:DEY
830 STA (ptr1),Y:INC ptr1:BNE skip
840 INC ptr1+1
850 .skip
860 LDA ptr1+1:CMP top+1:BNE squash
870 LDA ptr1:CMP top:BNE squash:SEC
880 LDA top:SBC #1:STA top:LDA top+1
890 SBC #0:STA top+1:RTS
900 .setup
910 LDA #0:STA ptr:LDA &18:STA ptr+1
920 RTS
930 .pack
940 LDY #1:LDA (ptr),Y:CMP #255
950 BNE cont:JMP &FFE7
960 .cont
970 LDY #3:LDA (ptr),Y:STA len:CLC
980 ADC ptr:STA ptr1:LDA ptr+1:ADC #0
990 STA ptr1+1:LDY #1:LDA (ptr1),Y
1000 CMP #255:BNE cont1:JMP &FFE7
1010 .cont1
1020 LDY #2:LDA (ptr1),Y:STA lo
1030 DEY:LDA (ptr1),Y:STA hi:JSR print
1040 LDY #3:LDA (ptr1),Y:STA len1
1050 CLC:ADC len:STA size:LDA #0:ADC
#0:STA size+1:LDA size+1:BNE newline:L
DA size:CMP #238:BCS newline
1060 INY:LDA (ptr),Y:CMP #&0C
1070 BEQ newline:CMP #42:BEQ newline
1080 CMP #&F4:BEQ newline:LDA (ptr1),Y
1090 CMP #&0D:BEQ newline
1100 .checkDATA
1110 CMP #&DC:BEQ reject
1120 PHA:JSR findIF:PLA:BCS newline
1130 .checkREM
1140 CMP #&F4:BNE checkREF
1150 .reject
1160 JSR findendline:JSR findendline
1170 JMP pack
1180 .checkREF
1190 JSR findGOTO:BCS newline
1200 JSR concatenate:JMP pack
1210 .newline
1220 CLC:LDA len:ADC ptr:STA ptr
1230 LDA ptr+1:ADC #0:STA ptr+1
1240 JMP pack
1250 .concatenate
1260 CLC:LDA len:ADC len1:SEC:SBC #3
1270 LDY #3:STA (ptr),Y:LDA #ASC":"
1280 LDY #0:STA (ptr1),Y:CLC:LDA ptr1
1290 ADC #1:STA ptr1:LDA ptr1+1:ADC #0
1300 STA ptr1+1:JSR packit
1310 JSR packit:JMP packit
1320 .findendline
1330 LDY #3:LDA (ptr),Y:CLC:ADC ptr
1340 STA ptr:LDA ptr+1:ADC #0
1350 STA ptr+1:RTS
1360 .packit
1370 LDA ptr1:STA ptr2
1380 LDA ptr1+1:STA ptr2+1
1390 .shunt
1400 LDY #1:LDA (ptr2),Y:DEY
1410 STA (ptr2),Y:INC ptr2:BNE skip1
1420 INC ptr2+1
1430 .skip1
1440 LDA ptr2+1:CMP top+1:BNE shunt
1450 LDA ptr2:CMP top:BNE shunt
1460 SEC:LDA top:SBC #1:STA top
1470 LDA top+1:SBC #0:STA top+1:RTS
1480 .findIF
1490 LDY #4
1500 .ifloop
1510 LDA (ptr),Y:CMP #&E7:BEQ foundIF
1520 CMP #42:BEQ foundIF:CMP #&F4
1530 BEQ foundIF:INY:CPY len:BCC ifloop
1540 CLC:RTS
1550 .foundIF
1560 SEC:RTS
1570 .findGOTO
1580 LDY #1:LDA (ptr1),Y:STA hi:INY
1590 LDA (ptr1),Y:STA lo:LDA #64
1600 STA num1:STA num2:STA num3
1610 LDA lo:AND #63:ORA num2:STA num2
1620 LDA hi:AND #63:ORA num3:STA num3
1630 LDA lo:AND #192:EOR #64:LSR A
1640 LSR A:ORA num1:STA num1
1650 LDA hi:AND #192:EOR #64:LSR A
1660 LSR A:LSR A:LSR A:ORA num1
1670 STA num1:LDA #0:STA ptr2
1680 LDA &18:STA ptr2+1
1690 .findmatch
1700 LDY #0:LDA (ptr2),Y:CMP #&8D
1710 BNE next:INY:LDA (ptr2),Y
1720 CMP num1:BNE next:INY:LDA (ptr2)
,Y
1730 CMP num2:BNE next:INY:LDA (ptr2)
,Y
1740 CMP num3:BNE next:SEC:RTS
1750 .next
1760 CLC:LDA ptr2:ADC #1:STA ptr2
1770 LDA ptr2+1:ADC #0:STA ptr2+1
1780 CMP top+1:BNE findmatch:LDA ptr2
1790 CMP top:BNE findmatch:CLC:RTS
1800 .print
1810 LDA #8:JSR &FFEE:JSR &FFEE
1820 JSR &FFEE:JSR &FFEE:JSR &FFEE
1830 LDA #0:STA tenthou:STA thou
1840 STA hund:STA ten
1850 .dotenthou
1860 SEC:LDA lo:SBC #10000 MOD 256
1870 STA num:LDA hi:SBC #10000 DIV 256
1880 BCC dothou:STA hi:LDA num:STA lo
1890 INC tenthou:JMP dotenthou
1900 .dothou
1910 SEC:LDA lo:SBC #1000 MOD 256
1920 STA num:LDA hi:SBC #1000 DIV 256
1930 BCC dohund:STA hi:LDA num:STA lo
1940 INC thou:JMP dothou
1950 .dohund
1960 SEC:LDA lo:SBC #100:STA num
1970 LDA hi:SBC #0:BCC doten:STA hi
1980 LDA num:STA lo:INC hund:JMP dohu
nd
1990 .doten
2000 SEC:LDA lo:SBC #10:STA num
2010 LDA hi:SBC #0:BCC output:STA hi
2020 LDA num:STA lo:INC ten:JMP doten
2030 .output
2040 LDA tenthou:CLC:ADC #48:JSR &FFEE
2050 LDA thou:CLC:ADC #48:JSR &FFEE
2060 LDA hund:CLC:ADC #48:JSR &FFEE
2070 LDA ten:CLC:ADC #48:JSR &FFEE
2080 LDA lo:CLC:ADC #48:JMP &FFEE
2090 .message
2100 LDY #0
2110 .messLoop
2120 LDA (&50),Y:CMP #13:BEQ exitmess
2130 JSR &FFEE:INY:JMP messloop
2140 .exitmess
2150 RTS
2160 .intro:OPT FNequs("BASIC packer
version 0.3")
2170 .mess1:OPT FNequs("Stripping spa
ces...")
2180 .mess2:OPT FNequs("Packing line:
00000")
2190 ]:NEXT
2200 $&7000="SAVE PACK 900 "+STR$~P%
2210 X%=0:Y%=&70:CALL&FFF7
2220 END
2230 DEF FNequs(A$)
2240 $P%=A$:P%=P%+LENA$+1
2250 =PASS
```

electron user

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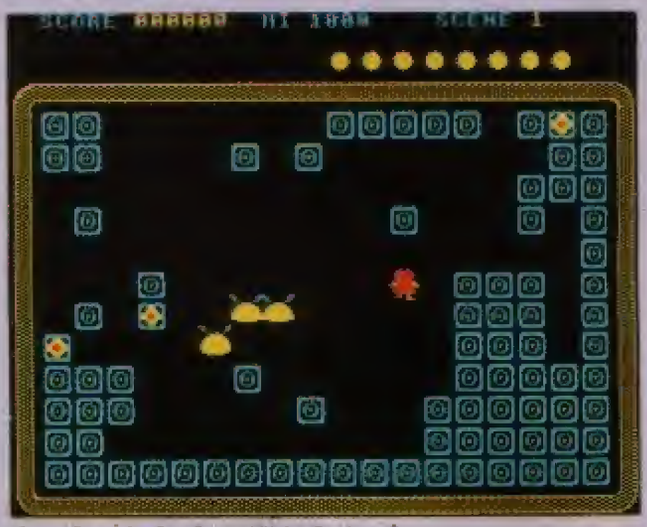
*Kill the monster in Barbarian II*



*Percy Penguin: Can Percy kill the Snobees?*

# It's lucky 13

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*Supplier: Superior Software, PO Box 6, Brigg, South Humberside DN20 9NH.*
*Tel: 0652 58585*

electron user Golden game

SUPERIOR Software certainly shows no signs of superstition as it launches number 13 of what is easily the longest running series of compilations for the Electron. Four more programs from the recent, and more distant, past – two of which were coded by the ubiquitous Peter Scott.

**Hyperball** is a game of the Breakout genre. You'll probably remember the Breakout revival of a couple of years ago when straightforward brick busting gave way to a more sophisticated game with feature bricks and bonus levels. Hyperball is one of these.

With a comprehensive set of feature bricks at your disposal you could be forgiven for thinking that the game was going to be a piece of cake – well don't you believe it. This is one of the most formidable Breakout clones that I have encountered on any machine.

Combine this degree of difficulty with the fact that there are 120 different playing arenas to complete and you could be faced with hordes of frustrated Hyperballers.

Thankfully the programmer has anticipated this problem and split the 120 arenas into six groups of 20, allowing you to start on any one of the six.

At least in this way you will get to play on a minimum of six different arenas.

Catching a dislodged feature brick activates one of the eight possible special effects, the majority of which work in your favour. Catching the Detonator brick allows you to split the ball into eight separate fragments with a press of Return. This is most effective if you have just manoeuvred your ball behind the wall.

The Slowball brick is self-explanatory, as is the Stickball one. Infrared changes the colours used on the screen, making otherwise invisible bricks appear again.

A little firepower is introduced with the inclusion of a Laser brick, and Indestruct increases the mass of your ball, giving it the ability to plough effortlessly through even the most robust of brick walls.

Smart-block is a bit of a sneaky inclusion: if you are able to collect three of these special pieces of masonry without losing a life you can move straight on to the next arena.

This sounds hunkydory until you begin collecting these blocks. I am certain that the program drops them in such a way that you are tempted into lunging for that third elusive block, inevitably losing a life in the process. The final variety of brick is disguised as an alien and, if collected by accident, has unfortunate effects upon the wellbeing of your bat.

A touch of originality is injected between rounds. The successful completion of an arena is rewarded with a simple bonus routine. A flashing bat appears on the screen and all that you have to do is press the spacebar when it is visible and you earn yourself bonus points.

OK, so it's hardly an Earth shattering bonus round, but what is useful is what you can do with those points once you have won them.

*One of the 120 Hyperball screens*

If you aren't too concerned about achieving immortality in the high score table you can trade points for three types of laser cannon, a warp drive or an extra life.

Hyperball is one of the biggest and best versions of Breakout on the Electron, and a most worthy inclusion in this compilation.

**Pandemonium**, second in the compilation, is unmistakably from the keyboard of Peter Scott, the prolific author of countless platform games, most of which look just like this one.

On this occasion you are faced with the task of collecting all 12 parts of a core. The instructions are pretty vague so we must assume that some sort of nuclear reactor is involved.

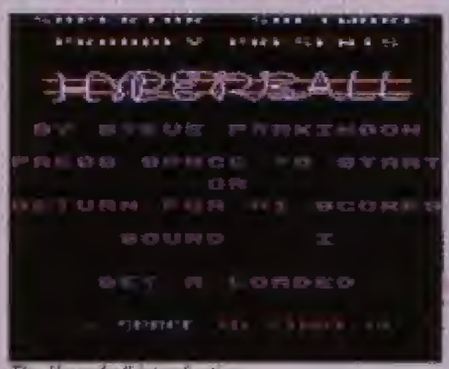
Armed with a laser, a healthy jump, the reflexes of a cat and the intellect of an Einstein you set out into a hostile world that is literally teeming with alien beings and nasty stinging plant-like things.

To make things easier, anything you are supposed to collect is coloured blue. In addition to the core parts you will find food, laser energy and extra lives.

Pandemonium is a highly polished example of Mr Scott's work. As usual, lateral thinking should be used at all times. Identify the most logical route from A to B then ignore it completely, select what appears to be the most unlikely of directions and you won't be far wrong.

Apparently impossible jumps between platforms can often be negotiated by having

*Pandemonium: A highly polished example of Peter Scott's work*




*The Hyperball introduction*

*Knock out the bricks in Hyperball*

at least one foot standing on thin air before you take off. Impressive vertical jumps can be achieved by standing on one of the many large springs.

Worthy of note are the phone box teleports, which can provide a speedy means of transport in an otherwise hostile environment.

The only snag is that you must know the code number of your destination teleport before you can activate the device. In other words you have got to have reached the far teleport on foot before you can take a short cut.

This is not a program that pushes back the frontiers of platform gaming, but what it does, it does well.

**Percy Penguin** is a version of a game that was a moderate success in the arcades back in the mid-eighties. Unfortunately, it isn't the best of the arcade conversions that reached the Electron.

It is set in a maze-like arctic wilderness constructed of blocks of ice. This inhospitable landscape is inhabited by Percy Penguin and a swarm of Snobees, stinging creatures that have an insatiable appetite for penguins.

As luck would have it Percy has left his mega-turbo laser pistol back in the igloo, so he must improvise if he is to survive. The aim is to rid the maze of Snobees, the numbers of which increase as you progress through the levels.

The penguin is an inventive little critter and Percy soon realises that an ice cube weighing several hundred kilos takes a heck of a lot of stopping once it gets moving. Using a combination of careful positioning and some pretty good timing you can help Percy puree the Snobee population.

As a game, Percy Penguin falls down in several areas. Response to the controls is poor, the fluidity of the action suffers in proportion to the degree of on-screen activity, and there is no indication as to where the new Snobees will appear.

In the original game the inactive Snobees were encased in blocks of ice, so you knew where to stand before killing your next one.

In this version the newly hatched bees appear at random, but more often than not, random means right beside Percy and you're minus one more life.

I suppose that if you haven't been spoilt with the original then you won't notice the discrepancies, but you'll still have to thump the push button until you get a response. For me this is the weakest of Sam's offerings, but one out of four isn't too bad.

Sam's final tid-bit is **Barbarian 2**. In the first episode of this hack and slash extravaganza Mr Barbarian took on all comers in his valiant bid to free Princess Mariana, alias the curvaceous Ms Whittaker, from the clutches of the evil Drax.

Drax escaped justice and fled to the deepest recesses of his lair. If the world is to sleep easy in its bed the Barbarian or Mariana must venture forth into this hostile land and seek out the coward.

Yes she is just as likely to kill the dinosaurs as he is.

Barbarian 2 employs a different format. The straightforward fight to the death has been replaced by an arcade adventure type scenario. The game is still packed full of hacking and slashing, but this time you also have to walk about and find objects.

Spread over four levels, with roughly 26 screens each, the Drax domain is quite extensive. An additional element of difficulty is introduced in the form of changes in direction as you step from one screen to the next.

It may appear that you have merely moved by one screen to the right, but don't you believe it. If you keep an eye on the compass arrow at the bottom of the display you will find that you have turned through 90 degrees.

As the instructions state, a map is pretty useful if you are to collect all of the objects and then find your way back to the exit.

Keyboard controls are used throughout: These are extensive, complicated, and one of the biggest difficulties you will encounter in playing the game.

Our hero or heroine can perform six directional and four aggressive moves, the latter being initiated by pressing Return, plus any one of four direction keys. For a long time I found myself turning around or jumping into the air when what I actually wanted to do was decapitate my opponent with a flying neck chop.

Most of the humanoid opponents have been replaced by horrible nasty creatures that snap and bite, plus an oversized yellow dinosaur with a taste for musclemen.

Various objects must be collected en route, many of which have magical properties, without which your quest is doomed to failure. The orb and the shield guard against death from Drax's magic and the demon's fire, while other trinkets boost the usual parameters such as strength and resistance to damage.

Barbarian 2 gives you very little time to ponder your current predicament, if you stand around for more than a couple of seconds there is a puff of smoke and some slobbering beast starts lumbering in your direction.

How you are supposed to sit with pencil and paper and map each level I don't know, I spent most of my time running from screen to screen trying to avoid the monsters, rivers and those infernal bottomless pits.

With patience, and a fair amount of effort, you will eventually master the complex control combinations that are the key to success in Barbarian 2 – from then on things really begin to get difficult.

It would appear that Superior has come up trumps again with yet another cracking compilation. Thirteen may be an unlucky number for some, but certainly not for Sam.

**Jon Revis**

| | |
|---|---|
| ***Sound*** | ***7*** |
| ***Graphics*** | ***8*** |
| ***Playability*** | ***9*** |
| ***Value for money*** | ***9*** |
| ***Overall*** | ***9*** |

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## SOFTWARE CHART

| THIS MONTH | LAST MONTH | TITLE (Software House) | COMMENTS | PRICE |
|---|---|---|---|---|
| 1 | • | GRID IRON<br>*Top Ten* | Fed up with European-style football? Then try the American version. You will find that more strategy and thought are called for. | 2.99 |
| 2 | 20 | PAPERBOY<br>*Encore* | Back near the top of the charts this month. It's a pity about the flicker and slow speed. Get a turbo to improve matters. | 2.99 |
| 3 | • | SOCCER BOSS<br>*Alternative* | Not a very new title, but if you fancy your chances for soccer boss stardom in cup or league, then you have little to lose at this price. | 1.99 |
| 4 | 8 | TOMCAT<br>*Players* | Superb graphic loading displays and some of the best game screens seen on the Electron yet. The parallax scrolling will delight turbo owners. | 1.99 |
| 5 | 16 | YIE AR KUNG FU<br>*Hit Squad* | There have been many clones and any combat game is invariably compared to it. A nice trip into meaningless violence if you like that sort of thing. | 2.99 |
| 6 | • | PLAY IT AGAIN SAM 2<br>*Superior* | Containing the classics Repton 3, Crazee Rider, Galaforce and Codename: Droid. Definitely one of the best Sams around. | 9.95 |
| 7 | 9 | FRUIT MACHINE<br>*DK Tronics* | If you don't want to lose your money you can watch for the bars and cherries in your own home. Dosn't quite work as a concept though. | 9.99 |
| 8 | 10 | SPELLBINDER<br>*Superior* | Another original from the Superior stable. Arcade adventure but with a little more to offer than some of its contemporaries. | 9.95 |
| 9 | • | BOXER<br>*Acornsoft* | Feel you want to hit something, but daren't? Then why not take your emotions out on the keyboard and a little sprite? | 9.99 |
| 10 | 15 | STRIKE FORCE HARRIER<br>*Alternative* | Now a budget title, you can take off with this excellent Mirrorsoft flight simulator. Good feel to the controls and realistic movement. | 1.99 |
| 11 | • | REPTON 2<br>*Blue Ribbon* | The little green friend has been revitalised in one of his earlier roles. If you are missing this one from your collection – shame on you. | 2.99 |
| 12 | • | COLOSSUS 4 CHESS<br>*CDS* | The oldest strategy game in the world. Good training for a human versus human contest. So see if you can pit your wits against the computer and win. | 9.95 |
| 13 | • | TARZAN<br>*Superior* | If leaping from tree to tree appeals to you, and the voice of the wild beckons then you may be a little disappointed with this. | 2.99 |
| 14 | 11 | CREEPY CAVE<br>*Atlantis* | Budget time with a chilly underground arcade adventure. Why the ghost wants your house key is beyond me. But you better get to him quickly. | 1.99 |
| 15 | 3 | JOE BLADE 2<br>*Players* | The graphics are good and the game very playable. The puzzle screens will keep you and community conscious Joe busy for hours. | 1.99 |
| 16 | • | PLAY IT AGAIN SAM 5<br>*Superior* | Another compilation of four games this time covering such games as: the brilliant Imogen, colourful Elixir, and new Bugblaster and Fortress. | 9.95 |
| 17 | • | RICOCHET<br>*Superior* | Recognizable format and very addictive and a must if you are looking for something as challenging as Citadel and Palace of Magic. | 2.99 |
| 18 | • | DEATH STAR<br>*Blue Ribbon* | Another excuse to save the world, and to shoot everything in sight. Not a classic but a harmless way to while away a few hours. | 1.99 |
| 19 | • | FOOTBALLER OF THE YEAR<br>*Gremlin* | Tie up your boots and see if you qualify. Have you the skills and determination to win through? Not a bad effort. | 9.95 |
| 20 | 5 | QUEST<br>*Superior* | Another arcade game from Superior. Not as special as some of the earlier releases, but well implemented for all that. | 9.95 |

# Throw the dice

**A game combining skill, logic and luck from Rog Frost**

**DICE pastimes are always popular and here's one – the Channel Island Game – that involves logical and deductive thinking along with the luck of the throw. It is a simple, fun game which you can enjoy alone or can be played by up to six people.**

The aim is to cover as many of the numbers 1 to 9 as possible. Two dice are thrown and their values are added.

This sum is then used to cover any digits which add up to the dice total and haven't already been covered.

To cover one or more digits, just key in the numbers followed by Return. Note that no comma or space is needed.

The dice are then thrown again, and further numbers covered. If the remaining numbers add up to less than six only one die is thrown, and this continues until there is no way to match the dice value with any of the remaining digits.

The numbers left then become the game score.

For example, if the digits remaining are 3 and 7 the score for that game is 37. Low scores are the best and a score of zero is obtained if all of the digits are covered.

An alternative scoring system is to have the score being the sum of the remaining digits.

Again, lowest wins. To do this, just change line 1470 to:

```
1470 EG$="":FORu%=1TO9:IF N%(u%)
=100 EG$=STR$(VAL(EG$)+u%)
```

The program contains comprehensive checking routines and will only allow legal moves. It will also tell you when no move is possible so the game is over.

This means you will know if it is possible somehow to use your current throw – a big advantage over using real dice.

The program keeps a check on the scores and adds them up after each round.

The procedures have been given meaningful names so it's easy to see how the program works and even tailor it to your own rules. Variables are of the integer type where possible, as these are dealt with most quickly by the micro.

So key it in and start playing. And, once you've learnt the rules with your micro checking for legal moves, you can even play it with two dice and a piece of paper.

**Example throws**

| Throw | Score | Cover |
|---|---|---|
| 4/1 | 5 | 1/4 or 2/3 or 5 |
| 1/1 | 2 | 2 |
| 1/2 | 3 | 1/2 or 3 |
| 6/3 | 9 | 1/8 or 2/7 or 3/6 or 4/5 or 9 |

```
  10 REM CHANNEL ISLAND GAME
  20 REM By Rog Frost
  30 REM (c) Electron User
  40 *FX11,0
  50 ON ERROR MODE6:PROCerr
  60 MODE6
  70 PROCinstructions
  80 DIMN%(9),D%(4),CX(4),RX(4)
  90 PROCchars
 100 REPEAT
 110 MODE4:VDU23;8202;0;0;0;0;19
,1,4;0;19,0,3;0;
 120 FORro%=1TOround%:FORplayer%
=1TOnn%:CLS
 130 PROCarray
 140 PROCdisplaynumbers
 150 REPEAT
 160 PROCthrowdice
 170 PROCcanithedone
 180 IF EG$<>"" GOTO240
 190 REPEAT
 200 PROCmakechoice
 210 PROCcheckchoice
 220 UNTIL U%=0
 230 PROCsortout
 240 UNTILEG$<>""
 250 NEXTplayer%:NEXTro%
 260 MODE6:PROCresults
 270 CLEAR:RUN
 280 END
 290 DEFPROCinstructions
 300 VDU19,0,4;0;
 310 PRINTTAB(10,1)"CHANNEL ISLA
ND GAME"TAB(10,2)"----------------
-----"
 320 PRINT'"You must try to hide
 all of"'"the numbers at the top
of the screen."'"Two dice are sp
un. You can hide any"'"numbers wh
ose sum is the same as the"'"sum
```

```
of the dice."
  330 PRINT'"To cover numbers jus
t type them in any"'"order and th
en hit Return."
  340 PRINT'"Illegal moves will n
ot be accepted by"'"the computer.
 You will be told when"'"the game
 is over."
  350 PRINT'"Your score for a gam
e is a direct read"'"of the digit
s left uncovered."
  360 PRINTTAB(2,22)"PRESS SPACE
TO CONTINUE":REPEATUNTILINKEY-99:
CLS
  370 DIMname$(8),score%(6)
  380 PRINTTAB(2,22)"Just Press R
eturn to complete list"TAB(0,0)
  390 nn%=0:REPEAT:nn%=nn%+1:PRIN
T'"Enter player ";nn%;"'s name ";
:INPUT;name$(nn%)
  400 name$(nn%)=LEFT$(name$(nn%)
,5):*FX15,0
  410 UNTILname$(nn%)="" OR nn%=6
  420 IF name$(nn%)="" nn%=nn%-1
  430 PRINT''"How many rounds do
you want?":INPUT,round%
  440 ENDPROC
  450 END
  460 DEFPROCchars
  470 VDU23,255,255,255,255,255,2
55,255,255,255
  480 VDU23,230,0,0,0,0,0,0,0,0
  490 VDU23,231,0,0,0,24,24,0,0,0
  500 VDU23,232,0,24,24,0,0,24,24
,0
  510 VDU23,233,192,192,0,24,24,0
,3,3
  520 VDU23,234,195,195,0,0,0,0,1
95,195
  530 VDU23,235,195,195,0,24,24,0
,195,195
  540 VDU23,236,195,195,0,195,195
,0,195,195
  550 ENDPROC
  560 DEFPROCthrowdice
  570 VDU28,15,30,30,26:CLS:VDU26
  580 FORN%=1TORND(30)+1
  590 X%=RND(6):Y%=RND(6)
  600 IF tot%>39 Y%=0
  610 MOVE467,145:DRAW467,202:DRA
W524,202:DRAW524,145:DRAW467,145
  620 MOVE787,145:DRAW787,202:DRA
W844,202:DRAW844,145:DRAW787,145
  630 PRINTTAB(15,26);CHR$(230+X%
)TAB(25,26);CHR$(230+Y%)
  640 TIME=0:REPEATUNTILTIME>2
  650 NEXT
  660 PRINTTAB(15,28);X%;:IF tot%
<40 PRINTTAB(25,28);Y%
  670 PRINTTAB(20,29);X%+Y%
  680 ENDPROC
  690 DEFPROCdisplaynumbers
  700 COLOUR129:CLS:COLOUR128:VDU
28,1,30,38,1:CLS:VDU26
  710 PRINTTAB(1,2)"THE CHANNEL I
SLAND GAME - ";name$(player%);"'s
 turn"TAB(1,3);STRING$(38,"-")
  720 PROCsortout
  730 REMFORN%=1TO9:PRINTTAB(N%*4
,5);N%TAB(N%*4,6);CHR$255TAB(N%*4
,7);CHR$255:NEXT
  740 ENDPROC
  750 DEFPROCmakechoice
  760 REPEAT
  770 PRINTTAB(1,10);SPC(38)
  780 PRINTTAB(9,10)"SELECT YOUR
NUMBER(S)";
  790 *fx15,0
  800 INPUTG%
  810 D%(1)=G%DIV1000:B%=G%-(D%(1
)*1000)
  820 D%(2)=B%DIV100:D%=B%-(D%(2)
*100)
  830 D%(3)=D%DIV10
  840 D%(4)=D%MOD10
  850 UNTILD%(1)+D%(2)+D%(3)+D%(4
)=X%+Y%
  860 ENDPROC
  870 DEFPROCcheckchoice
  880 U%=0
  890  IF D%(1)=D%(2) AND D%(1)<>
0 U%=1
  900  IF D%(1)=D%(3) AND D%(1)<>
0 U%=1
  910  IF D%(1)=D%(4) AND D%(1)<>
0 U%=1
  920  IF D%(2)=D%(3) AND D%(2)<>
0 U%=1
  930  IF D%(2)=D%(4) AND D%(2)<>
0 U%=1
  940  IF D%(3)=D%(4) AND D%(3)<>
0 U%=1
  950 FORL%=1TO9
  960 IF N%(L%)=D%(1) L%=9:U%=1
  970 NEXT
  980 FORL%=1TO9
  990 IF N%(L%)=D%(2) L%=9:U%=1
 1000 NEXT
 1010 FORL%=1TO9
 1020 IF N%(L%)=D%(3) L%=9:U%=1
 1030 NEXT
 1040 FORL%=1TO9
 1050 IF N%(L%)=D%(4) L%=9:U%=1
 1060 NEXT
 1070 IF U%=0 N%(D%(1))=D%(1):N%(
D%(2))=D%(2):N%(D%(3))=D%(3):N%(D
%(4))=D%(4)
 1080 IF U%=1 PRINTTAB(14,13)"CAN
'T DO":VDU28,1,15,38,8:TIME=0:REP
EATUNTILTIME>200:CLS:VDU26
 1090 sum%=0:FORloop%=1TO9:sum%=s
um%+N%(loop%):NEXT
 1100 tot%=0:FORch%=1TO9:IFN%(ch%
)<>100 tot%=tot%+ch%
 1110 NEXT
 1120 IF sum%=45 PROCvictory
 1130 ENDPROC
 1140 DEFFNDCarray
 1150 U%=1:EG$="":tot%=0
 1160 FORZ%=1TO9:N%(Z%)=100:NEXT
 1170 ENDPROC
```

## ADVICE ARENA

*Tips for every Electron user, from beginner to expert*

GAMES' sound effects can often become irritating – especially to other people. Most games include a feature to toggle the sound status between on and off but, for those that don't, you can do it yourself by using *FX 210. This command is used with either 0 or 1 to determine whether you wish the sound on or off:

| |
|---|
| *FX 210,0 Enable sound ouput |
| *FX 210,1 Disable sound output |

So to silence games just type *FX 210,1 and CHAIN the program as usual.

Disc users should not press Shift + Break to boot their games, as this would disable the command. In most cases typing *EXEC !BOOT will load the disc but if this doesn't work you should use *RUN !BOOT.

```
 1180 DEFPROCsortout
 1190 VDU28,1,15,38,4:CLS:VDU26
 1200 MOVE100,890:DRAW1200,890:DR
AW1200,730:DRAW100,730:DRAW100,89
0
 1210 FORJ%=1TO9
 1220 IF N%(J%)=100 PRINTTAB(J%*4
,5);J%TAB(J%*4,6);CHR$255TAB(J%*4
,7);CHR$255ELSEPRINTTAB(J%*4,5)CH
R$255TAB(J%*4,6);CHR$255TAB(J%*4,
7);CHR$230
 1230 NEXT
 1240 ENDPROC
 1250 DEFPROCvictory
 1260 VDU28,1,20,38,10:CLS:VDU26
 1270 PRINTTAB(11,10)"YOU CLEARED
 THE LOT"TAB(15,14)"WELL DONE"
 1280 U%=0:EG$="WIN"
 1290 PRINTTAB(7,19)"PRESS SPACE
FOR NEXT ROUND":REPEATUNTILINKEY-
99
 1300 ENDPROC
 1310 DEFPROCcanitbedone
 1320 RESTORE(1600+((X%+Y%)*10))
 1330 REPEAT:READ N$
 1340 FORW%=1TOLEN(N$)
 1350 R%=1
 1360 C%(W%)=VAL(MID$(N$,W%,1))
 1370 IFN%(C%(W%))<>100 R%=0
 1380 IF R%=0 W%=LEN(N$)
 1390 NEXT
 1400 UNTILR%=1 OR N$="0"
 1410 IF N$="0" PROCendgame
 1420 ENDPROC
 1430 DEFPROCendgame
 1440 VDU28,1,22,38,10:CLS:VDU26
 1450 VDU7
 1460 PRINTTAB(15,10)"ROUND OVER"
 1470 EG$="":FORu%=1TO9:IF N%(u%)
=100 EG$=EG$+STR$(u%)
 1480 NEXT
 1490 score%(player%)=score%(play
er%)+VAL(EG$)
 1500 PRINTTAB(15,13)"SCORE = ";E
G$TAB(12,15);name$(player%);" has
 scored ";score%(player%)
 1510 PRINTTAB(7,19)"PRESS SPACE
FOR NEXT GAME"
 1520 REPEATUNTILGET=32
 1530 ENDPROC
 1540 DEFPROCresults
 1550 VDU19,0,4;0;:PRINTTAB(8,2)"
THE CHANNEL ISLAND GAME"TAB(8,3)"
------------------------"
 1560 PRINTTAB(2,6)"NAME"TAB(22,6
)"SCORE"
 1570 FORpl%=1TOnn%:PRINTTAB(2,8+
(pl%*2));name$(pl%)TAB(22,8+(pl%*
2));score%(pl%):NEXT
 1580 PRINTTAB(2,22)"PRESS SPACE
FOR NEXT GAME"
 1590 REPEATUNTILINKEY-99
 1600 ENDPROC
 1610 DATA1,0
 1620 DATA2,0
 1630 DATA3,21,0
 1640 DATA4,31,0
 1650 DATA5,41,32,0
 1660 DATA6,51,42,321,0
 1670 DATA7,61,52,43,421,0
 1680 DATA8,71,62,53,521,431,0
 1690 DATA9,81,72,63,54,621,531,4
32,0
 1700 DATA91,82,73,64,721,631,541
,532,4321,0
 1710 DATA92,83,74,65,821,731,641
,632,542,5321,0
 1720 DATA93,84,75,921,831,741,73
2,651,642,543,6321,5421,0
 1730 DEFPROCerr
 1740 REPORT:PRINT" at line ";ERL
 1750 *fx12
 1760 END
```

# Go BIG

**Make an impression with these banner printing routines from Wayne Boyd**

**EVERY event, from birthday parties to exhibitions, can use banners to make announcements. Now, with the two routines described here, you can use your Electron and printer to produce large, effective displays.**

Each program has its own advantage over the other so select the one most suited to your needs, type it in and start printing. Ideally, key-in both routines and experiment with the various options to obtain the best results.

Listing I uses data statements to define the characters. This gives a much better resolution than if the micro's built-in ones are used, but has the disadvantage that there's only room in the Electron's memory for one set of characters, so the version here is for capital letters only. Another drawback of this method is that the program is rather long. It could be shortened slightly, but has been left in this form for clarity.

You can select several types of printout large or small and what characters are used to make up the letters. The Letter for Letter option causes the large letter to be made up from a pattern of small ones.

The bold type option uses a special user defined character on some Epson and compatible printers but will not function on all of them. If it doesn't work on yours, you could try removing line 5431 and changing line 5470 to:

```
5470 VDU1,27,121,64,255,255,255
,255,255,255,255,255,255,3
```

On some printers this will cause the output to be made up of small blocks. You could also try defining your own character in line 5470. If you do remove line 5431, you can also remove PROCepson completely from the end of the program.

Listing II is designed to overcome the capitals only drawback but suffers from a lack of resolution. It uses the Electron's character definitions that are in your Electron and is therefore much shorter.

You can use all the characters in your micro and also load different fonts or character definitions for special banners. Remember, though, that the output from this program is very blocky – so if you define any characters keep that in mind.

You have full control of both the height and width of the characters from this program – ranging from one to eight.

Each program has its own pros and cons, but no matter what your needs, one should give the desired result. So start experienting and make sure everyone knows about the next event you organise.

**Listing I**

```
   10 REM ************************
**
   20 REM **   BANNER PRINTING
**
   30 REM **      PROGRAM
**
   40 REM **      -------
**
   50 REM ** Written By W.G.Boyd
**
   60 REM **  (c) Electron User
**
   70 REM ************************
**
   80 REM THE LINE NUMBERS OF THI
S
   90 REM PROGRAM MUST NOT BE CHA
NGED
  100 REM ******* IIIIIIIII *****
****
  110 DATA 6,70,80
  120 DATA 0,3,1,6,0,22,1,6,99,55
,70
  130 DATA 6,90,100
  140 DATA 0,3,1,34,99,55,70
  150 DATA 6,110,120
  160 DATA 0,3,1,6,0,22,1,6,99
  170 DATA 222
  180 REM *******         *******
  190 DATA 20,124,125
  200 DATA 0,5,99
  210 DATA 222
  220 REM ****** HHHHHHH ********
  230 DATA 6,210,220
  240 DATA 0,3,1,34,99
  250 DATA 15,230,240
  260 DATA 0,18,1,5,99
  270 DATA 6,250,260
  280 DATA 0,3,1,34,99
  290 DATA 222
  300 REM ******* EEEEEEE ******
  310 DATA 6,290,300
  320 DATA 0,3,1,34,99
  330 DATA 15,310,320
  340 DATA 0,3,1,5,0,10,1,5,0,10,
1,4,99
  350 DATA 222
  360 REM ********* LLLLLLLL ****
***
  370 DATA 6,360,370
  380 DATA 0,3,1,34,99
  390 DATA 15,380,390
  400 DATA 0,3,1,5,99
  410 DATA 222
  420 REM ******* TTTTTTT *******
  430 DATA 10,420,430
  440 DATA 0,33,1,4,99
  450 DATA 6,440,450
  460 DATA 0,3,1,34,99
  470 DATA 10,460,470
  480 DATA 0,33,1,4,99
  490 DATA 222
  500 REM ******** FFFFFFFF *****
**
  510 DATA 6,500,510
  520 DATA 0,3,1,34,99
  530 DATA 15,520,530
  540 DATA 0,18,1,5,0,10,1,4,99
  550 DATA 222
  560 REM ******* OOOOOOO *******
  570 DATA 2,560,570
  580 DATA 0,6,1,28,99
  590 DATA 2,580,590
  600 DATA 0,5,1,30,99
  610 DATA 2,600,610
  620 DATA 0,4,1,32,99
  630 DATA 15,620,630
  640 DATA 0,3,1,5,0,25,1,4,99
  650 DATA 2,640,650
  660 DATA 0,4,1,32,99
  670 DATA 2,660,670
  680 DATA 0,5,1,30,99
  690 DATA 2,680,690
  700 DATA 0,6,1,28,99
  710 DATA 222
  720 REM ****** CCCCCCC ******
  730 DATA 2,720,730
  740 DATA 0,6,1,28,99
  750 DATA 2,740,750
  760 DATA 0,5,1,30,99
  770 DATA 2,760,770
  780 DATA 0,4,1,32,99
  790 DATA 13,780,785
  800 DATA 0,3,1,5,0,25,1,4,99
  810 DATA 6,790,800
  820 DATA 0,3,1,7,0,21,1,6,99
  830 DATA 222
  840 REM ****** BBBBBBB *******
  850 DATA 6,830,840
  860 DATA 0,3,1,34,99,55,70
  870 DATA 10,850,860
  880 DATA 0,3,1,5,0,10,1,5,0,10,
1,4,99
  890 DATA 1,870,880
  900 DATA 0,4,1,17,0,1,1,14,99
  910 DATA 1,890,900
  920 DATA 0,5,1,15,0,3,1,12,99
  930 DATA 1,910,920
  940 DATA 0,6,1,13,0,5,1,10,99
  950 DATA 1,930,940
  960 DATA 0,7,1,11,0,7,1,8,99
  970 DATA 222
  980 REM ******* DDDDDDDD ******
  990 DATA 6,970,975
 1000 DATA 0,3,1,34,99
 1010 DATA 13,980,990
 1020 DATA 0,3,1,5,0,25,1,4,99
 1030 DATA 1,1000,1010
 1040 DATA 0,4,1,32,99
 1050 DATA 1,1020,1030
 1060 DATA 0,5,1,30,99
 1070 DATA 1,1040,1050
 1080 DATA 0,6,1,28,99
 1090 DATA 1,1060,1070
 1100 DATA 0,7,1,26,99
 1110 DATA 1,1080,1090
 1120 DATA 0,8,1,24,99
 1130 DATA 1,1100,1110
 1140 DATA 0,9,1,22,99
 1150 DATA 222
 1160 REM ******* MMMMMMMMM *****
*
 1170 DATA 6,1140,1145
 1180 DATA 0,3,1,34,99
 1190 DATA 1,1146,1150
 1200 DATA 0,32,1,4,99
 1210 DATA 1,1160,1170
 1220 DATA 0,31,1,4,99
 1230 DATA 1,1180,1190
 1240 DATA 0,30,1,4,99
 1250 DATA 1,1200,1210
 1260 DATA 0,29,1,4,99
 1270 DATA 1,1220,1230
 1280 DATA 0,28,1,4,99
 1290 DATA 1,1240,1250
 1300 DATA 0,27,1,4,99
 1310 DATA 1,1260,1270
 1320 DATA 0,26,1,4,99
 1330 DATA 2,1280,1290
 1340 DATA 0,25,1,4,99
 1350 DATA 1,1300,1310
 1360 DATA 0,26,1,4,99
 1370 DATA 1,1320,1330
 1380 DATA 0,27,1,4,99
 1390 DATA 1,1340,1350
 1400 DATA 0,28,1,4,99
 1410 DATA 1,1360,1370
 1420 DATA 0,29,1,4,99
 1430 DATA 1,1380,1390
 1440 DATA 0,30,1,4,99
 1450 DATA 1,1400,1405
 1460 DATA 0,31,1,4,99
```

```
1470 DATA 1,1407,1410
1480 DATA 0,32,1,4,99
1490 DATA 6,1420,1430
1500 DATA 0,3,1,34,99
1510 DATA 222
1520 REM ******* RRRRRR *******
1530 DATA 6,1460,1470
1540 DATA 0,3,1,34,99
1550 DATA 5,1480,1490
1560 DATA 0,18,1,5,0,10,1,4,99
1570 DATA 1,1500,1510
1580 DATA 0,17,1,6,0,10,1,4,99
1590 DATA 1,1520,1530
1600 DATA 0,16,1,7,0,10,1,4,99
1610 DATA 1,1540,1550
1620 DATA 0,15,1,8,0,10,1,4,99
1630 DATA 1,1560,1570
1640 DATA 0,14,1,9,0,10,1,4,99
1650 DATA 1,1580,1590
1660 DATA 0,13,1,10,0,10,1,4,99
1670 DATA 1,1600,1610
1680 DATA 0,3,1,18,0,1,1,14,99
1690 DATA 1,1620,1630
1700 DATA 0,3,1,17,0,3,1,12,99
1710 DATA 1,1640,1650
1720 DATA 0,3,1,16,0,5,1,10,99
1730 DATA 1,1660,1670
1740 DATA 0,3,1,15,0,7,1,8,99
1750 DATA 1,1680,1690
1760 DATA 0,3,1,14,0,9,1,6,99
1770 DATA 222
1780 REM ****** UUUUUUUU *******
1790 DATA 2,1720,1730
1800 DATA 0,6,1,31,99
1810 DATA 2,1740,1750
1820 DATA 0,5,1,32,99
1830 DATA 2,1760,1770
1840 DATA 0,4,1,33,99
1850 DATA 15,1780,1790
1860 DATA 0,3,1,5,99
1870 DATA 2,1800,1810
1880 DATA 0,4,1,33,99
1890 DATA 2,1820,1830
1900 DATA 0,5,1,32,99
1910 DATA 2,1840,1850
1920 DATA 0,6,1,31,99
1930 DATA 222
1940 REM ******** PPPPPPP ******
1950 DATA 6,1880,1890
1960 DATA 0,3,1,34,99
1970 DATA 9,1900,1910
1980 DATA 0,18,1,5,0,10,1,4,99
1990 DATA 1,1929,1930
2000 DATA 0,19,1,17,99
2010 DATA 1,1940,1950
2020 DATA 0,20,1,15,99
2030 DATA 1,1960,1970
2040 DATA 0,21,1,13,99
2050 DATA 1,1980,1990
2060 DATA 0,22,1,11,99
2070 DATA 1,2000,2010
2080 DATA 0,23,1,9,99
2090 DATA 222
2100 REM *******AAAAAAAA********
2110 DATA 2,2360,2370
2120 DATA 0,3,1,31,99
2130 DATA 2,2380,2390
2140 DATA 0,3,1,32,99
2150 DATA 2,2400,2450
2160 DATA 0,3,1,33,99
2170 DATA 13,2460,2470
2180 DATA 0,15,1,7,0,8,1,7,99
2190 DATA 2,2480,2490
2200 DATA 0,3,1,33,99
2210 DATA 2,2500,2510
2220 DATA 0,3,1,32,99
2230 DATA 2,2500,2510
2240 DATA 0,3,1,31,99
2250 DATA 222
2260 REM  Line number check
2270 REM  This line No. should b
e 2270
2280 REM ********* GGGGGGGG ****
****
2290 DATA 2,2560,2570
2300 DATA 0,6,1,28,99
2310 DATA 2,2580,2590
2320 DATA 0,5,1,30,99
2330 DATA 2,2600,2604
2340 DATA 0,4,1,32,99
2350 DATA 6,2607,2610
2360 DATA 0,3,1,5,0,25,1,4,99
2370 DATA 7,2620,2630
2380 DATA 0,3,1,5,0,8,1,5,0,12,1
,4,99
2390 DATA 6,2640,2650
2400 DATA 0,3,1,18,0,10,1,4,99
2410 DATA 222
2420 REM ******** JJJJJJJJ *****
**
2430 DATA 2,2680,2690
2440 DATA 0,6,1,5,99
2450 DATA 2,2700,2710
2460 DATA 0,5,1,6,99
2470 DATA 2,2720,2730
2480 DATA 0,4,1,7,99
2490 DATA 10,2740,2750
2500 DATA 0,3,1,5,0,25,1,4,99
2510 DATA 6,2760,2770
2520 DATA 0,3,1,34,99
2530 DATA 10,2780,2790
2540 DATA 0,33,1,4,99
2550 DATA 222
2560 REM ******* KKKKKKKKKK ****
***
2570 DATA 6,2820,2830
2580 DATA 0,3,1,34,99
2590 DATA 4,2840,2850
2600 DATA 0,18,1,5,99
2610 DATA 4,2860,2870
2620 DATA 0,14,1,5,0,4,1,4,99
2630 DATA 4,2880,2890
2640 DATA 0,10,1,5,0,12,1,4,99
2650 DATA 4,2900,2910
2660 DATA 0,6,1,5,0,20,1,3,99
2670 DATA 4,2920,2930
2680 DATA 0,3,1,4,0,27,1,3,99
2690 DATA 222
2700 REM ******* NNNNNNN *******
*****
2710 DATA 6,2960,2970
2720 DATA 0,3,1,34,99
2730 DATA 4,2980,2990
2740 DATA 0,25,1,6,99
2750 DATA 4,3000,3010
2760 DATA 0,19,1,6,99
2770 DATA 4,3020,3030
2780 DATA 0,13,1,6,99
2790 DATA 4,3040,3050
2800 DATA 0,7,1,6,99
2810 DATA 6,3060,3070
2820 DATA 0,3,1,34,99
2830 DATA 222
2840 REM ******* QQQQQQQ *******
**
2850 DATA 2,3100,3110
2860 DATA 0,6,1,28,99
2870 DATA 2,3120,3130
2880 DATA 0,5,1,30,99
2890 DATA 2,3140,3150
2900 DATA 0,4,1,32,99
2910 DATA 9,3160,3170
2920 DATA 0,3,1,5,0,25,1,4,99
2930 DATA 1,3180,3190
2940 DATA 0,3,1,5,0,3,1,4,0,18,1
,4,99
2950 DATA 4,3200,3210
2960 DATA 0,3,1,12,0,18,1,4,99
2970 DATA 1,3220,3230
2980 DATA 0,3,1,10,0,20,1,4,99
2990 DATA 2,3240,3250
3000 DATA 0,4,1,32,99
3010 DATA 2,3260,3270
3020 DATA 0,2,1,33,99
3030 DATA 2,3280,3290
3040 DATA 1,34,99
3050 DATA 2,3300,3310
3060 DATA 1,5,99
3070 DATA 2,3320,3330
3080 DATA 1,4,99
3090 DATA 222
3100 REM ******* SSSSSSS ******
**
3110 DATA 2,3350,3360
3120 DATA 0,7,1,4,0,8,1,13,99
3130 DATA 2,3370,3380
3140 DATA 0,6,1,5,0,7,1,15,99
3150 DATA 2,3390,3400
3160 DATA 0,4,1,7,0,5,1,19,99
3170 DATA 13,3410,3420
3180 DATA 0,3,1,5,0,7,1,5,0,13,1
,4,99
3190 DATA 2,3430,3440
3200 DATA 0,4,1,15,0,11,1,6,99
3210 DATA 2,3450,3460
3220 DATA 0,5,1,13,0,12,1,5,99
3230 DATA 2,3470,3480
3240 DATA 0,5,1,12,0,13,1,4,99
3250 DATA 222
3260 REM ******* VVVVVVVV ******
***
3270 DATA 2,3870,3880
3280 DATA 0,17,1,20,99
3290 DATA 2,3890,3900
3300 DATA 0,14,1,23,99
3310 DATA 2,3910,3920
3320 DATA 0,11,1,26,99
3330 DATA 2,3930,3940
3340 DATA 0,8,1,3,99
3350 DATA 2,3950,3960
3360 DATA 0,5,1,5,99
3370 DATA 2,3970,3980
3380 DATA 0,5,1,2,99
3390 DATA 3,3990,4000
3400 DATA 0,3,1,2,99
3410 DATA 2,4010,4020
3420 DATA 0,5,1,2,99
3430 DATA 2,4030,4040
3440 DATA 0,5,1,5,99
3450 DATA 2,4050,4060
3460 DATA 0,8,1,5,99
3470 DATA 2,4070,4080
3480 DATA 0,11,1,26,99
3490 DATA 2,4090,4100
3500 DATA 0,14,1,23,99
3510 DATA 2,4110,4120
3520 DATA 0,17,1,20,99
3530 DATA 222
3540 REM *******NNNN********
3550 DATA 20,2360,2370
3560 DATA 0,20,1,4,99
3570 DATA 222
3580 REM *******ZZZZZZZZ********
3590 DATA 3,2400,2410
3600 DATA 0,3,1,8,0,22,1,4,99
3610 DATA 3,2420,2430
3620 DATA 0,3,1,11,0,19,1,4,99
3630 DATA 3,2440,2450
3640 DATA 0,3,1,5,0,3,1,6,0,16,1
,4,99
3650 DATA 3,2460,2470
3660 DATA 0,3,1,5,0,6,1,6,0,13,1
,4,99
3670 DATA 3,2480,2490
3680 DATA 0,3,1,5,0,9,1,6,0,10,1
,4,99
3690 DATA 3,2500,2510
3700 DATA 0,3,1,5,0,11,1,6,0,8,1
,4,99
3710 DATA 3,2520,2530
3720 DATA 0,3,1,5,0,15,1,6,0,4,1
,4,99
3730 DATA 3,2540,2550
3740 DATA 0,3,1,5,0,17,1,12,99
3750 DATA 3,2560,2570
3760 DATA 0,3,1,5,0,21,1,8,99
3770 DATA 222
3780 REM **********,,,,,,,,,,***
******
3790 DATA 8,2600,2610
3800 DATA 0,3,1,4,99
3810 DATA 222
3820 REM **********,,,,,,,,,,***
******
3830 DATA 2,2640,2650
```

```
3840 DATA 1,1,0,2,1,4,99
3850 DATA 2,2660,2670
3860 DATA 1,2,0,1,1,4,99
3870 DATA 2,2680,2690
3880 DATA 0,1,1,6,99
3890 DATA 2,2700,2730
3900 DATA 0,2,1,5,99
3910 DATA 222
3920 REM ********::::::::::::****
****
3930 DATA 8,3070,3080
3940 DATA 0,12,1,6,0,9,1,6,99
3950 DATA 222
3960 REM ******* WWWWWW *******
3970 DATA 6,3510,3520
3980 DATA 0,3,1,34,99
3990 DATA 1,3530,3540
4000 DATA 0,4,1,4,99
4010 DATA 1,3550,3560
4020 DATA 0,5,1,4,99
4030 DATA 1,3570,3580
4040 DATA 0,6,1,4,99
4050 DATA 1,3590,3600
4060 DATA 0,7,1,4,99
4070 DATA 1,3610,3620
4080 DATA 0,8,1,4,99
4090 DATA 1,3630,3640
4100 DATA 0,9,1,4,99
4110 DATA 1,3650,3660
4120 DATA 0,10,1,4,99
4130 DATA 2,3670,3680
4140 DATA 0,11,1,4,99
4150 DATA 1,3690,3700
4160 DATA 0,10,1,4,99
4170 DATA 1,3710,3720
4180 DATA 0,9,1,4,99
4190 DATA 1,3730,3740
4200 DATA 0,8,1,4,99
4210 DATA 1,3750,3760
4220 DATA 0,7,1,4,99
4230 DATA 1,3770,3780
4240 DATA 0,6,1,4,99
4250 DATA 1,3790,3800
4260 DATA 0,5,1,4,99
4270 DATA 1,3810,3820
4280 DATA 0,4,1,4,99
4290 DATA 6,3830,3840
4300 DATA 0,3,1,34,99
4310 DATA 222
4320 REM *********?????????????****
***
4330 DATA 1,3870,3880
4340 DATA 0,31,1,5,99
4350 DATA 3,3890,3900
4360 DATA 0,31,1,5,99
4370 DATA 2,3910,3920
4380 DATA 0,3,1,5,0,3,1,6,0,14,1
,5,99
4390 DATA 1,3930,3940
4400 DATA 0,3,1,5,0,3,1,6,0,18,1
,2,99
4410 DATA 3,3950,3960
4420 DATA 0,3,1,5,0,3,1,9,0,15,1
,3,99
4430 DATA 3,3970,3980
4440 DATA 0,17,1,6,0,12,1,3,99
4450 DATA 3,3990,4000
4460 DATA 0,20,1,6,0,9,1,3,99
4470 DATA 3,4010,4020
4480 DATA 0,23,1,6,0,6,1,3,99
4490 DATA 2,4030,4040
4500 DATA 0,26,1,6,0,3,1,3,99
4510 DATA 1,4050,4060
4520 DATA 0,26,1,11,99
4530 DATA 2,4070,4080
4540 DATA 0,29,1,8,99
4550 DATA 1,4090,4100
4560 DATA 0,29,1,5,99
4570 DATA 222
4580 REM *******!!!!!!!!*********
*
4590 DATA 6,4122,4124
4600 DATA 0,3,1,5,0,3,1,26,99
4610 DATA 222
4620 REM ***********YYYYYYY*****
******
4630 DATA 3,4520,4530
4640 DATA 0,33,1,3,99
4650 DATA 2,4540,4550
4660 DATA 0,29,1,7,99
4670 DATA 1,4560,4570
4680 DATA 0,29,1,3,99
4690 DATA 2,4580,4590
4700 DATA 0,25,1,7,99
4710 DATA 1,4600,4610
4720 DATA 0,25,1,3,99
4730 DATA 2,4620,4630
4740 DATA 0,21,1,7,99
4750 DATA 1,4640,4650
4760 DATA 0,21,1,3,99
4770 DATA 2,4660,4670
4780 DATA 0,3,1,21,99
4790 DATA 3,4680,4690
4800 DATA 0,3,1,17,99
4810 DATA 2,4700,4710
4820 DATA 0,3,1,21,99
4830 DATA 1,4720,4730
4840 DATA 0,21,1,3,99
4850 DATA 2,4740,4750
4860 DATA 0,21,1,7,99
4870 DATA 1,4760,4770
4880 DATA 0,25,1,3,99
4890 DATA 2,4780,4790
4900 DATA 0,25,1,7,99
4910 DATA 1,4800,4810
4920 DATA 0,29,1,3,99
4930 DATA 2,4820,4830
4940 DATA 0,29,1,7,99
4950 DATA 3,4840,4850
4960 DATA 0,33,1,3,99
4970 DATA 222
4980 REM **********!!!!!!!!!!****
******
4990 DATA 4,5220,5230
5000 DATA 0,33,1,4,99
5010 DATA 2,5240,5250
5020 DATA 0,29,1,8,99
5030 DATA 2,5260,5270
5040 DATA 0,29,1,5,99
5050 DATA 2,5280,5290
5060 DATA 0,25,1,9,99
5070 DATA 4,5300,5310
5080 DATA 0,25,1,5,99
5090 DATA 222
5100 REM**********XXXXXXXX******
****
5110 DATA 2,5340,5350
5120 DATA 0,3,1,3,0,28,1,3,99
5130 DATA 2,5360,5370
5140 DATA 0,3,1,6,0,22,1,6,99
5150 DATA 2,5380,5390
5160 DATA 0,6,1,6,0,16,1,6,99
5170 DATA 2,5400,5410
5180 DATA 0,9,1,6,0,10,1,6,99
5190 DATA 2,5420,5430
5200 DATA 0,12,1,6,0,4,1,6,99
5210 DATA 2,5440,5450
5220 DATA 0,15,1,10,99
5230 DATA 2,5460,5470
5240 DATA 0,18,1,4,99
5250 DATA 2,5480,5490
5260 DATA 0,15,1,10,99
5270 DATA 2,5500,5510
5280 DATA 0,12,1,6,0,4,1,6,99
5290 DATA 2,5520,5530
5300 DATA 0,9,1,6,0,10,1,6,99
5310 DATA 2,5540,5550
5320 DATA 0,6,1,6,0,16,1,6,99
5330 DATA 2,5560,5570
5340 DATA 0,3,1,6,0,22,1,6,99
5350 DATA 2,5580,5590
5360 DATA 0,3,1,3,0,28,1,3,99
5370 DATA 222
5380 REM This line No. should be
5380
5390 REM Main program..
5400 MODE 6
5410 PROCdisplay
5420 PROCinput
5430 REM print..
5431 PROCepson
5440 *FX3,10
5450 VDU2
5460 VDU1,13
5470 VDU1,27,121,250,255,255,255
,255,255,255,255,255,255,3
5480 FOR letter=1 TO LEN(mess$)
5490 PROCGET
5500 RESTORE restore
5510 restore=restore-20
5520 VDU2
5530 REPEAT
5540 restore=restore+20
5550 READ repeat
5560 IF repeat=222 THEN VDU1,13:
VDU1,13:VDU1,13:GOTO 5680
5570 dataline=restore+10
5580 nextdata=restore+20
5590 READ lin:READ linn
5600 FOR loop=1 TO repeat
5610 REPEAT
5620 PROCprint
5630 UNTIL G=99
5640 VDU1,13
5650 RESTORE dataline
5660 NEXT loop
5670 RESTORE nextdata
5680 UNTIL repeat=222
5690 NEXT letter
5700 VDU3
5710 *FX3,0
5720 PRINT''''   Finished...":SO
UND1,-15,165,5
5730 END
5740 :
5750 DEF PROCGET
5760 K$=MID$(mess$,letter,1)
5770 IF K$="A"THEN restore=2110
5780 IF K$="B"THEN restore=850
5790 IF K$="C"THEN restore=730
5800 IF K$="D"THEN restore=990
5810 IF K$="E"THEN restore=310
5820 IF K$="F"THEN restore=510
5830 IF K$="G"THEN restore=2290
5840 IF K$="H"THEN restore=230
5850 IF K$="I"THEN restore=110
5860 IF K$="J"THEN restore=2430
5870 IF K$="K"THEN restore=2570
5880 IF K$="L"THEN restore=370
5890 IF K$="M"THEN restore=1170
5900 IF K$="N"THEN restore=2710
5910 IF K$="O"THEN restore=570
5920 IF K$="P"THEN restore=1950
5930 IF K$="Q"THEN restore=2850
5940 IF K$="R"THEN restore=1530
5950 IF K$="S"THEN restore=3110
5960 IF K$="T"THEN restore=430
5970 IF K$="U"THEN restore=1790
5980 IF K$="V"THEN restore=3270
5990 IF K$="W"THEN restore=3970
6000 IF K$="X"THEN restore=5110
6010 IF K$="Y"THEN restore=4630
6020 IF K$="Z"THEN restore=3590
6030 IF K$="."THEN restore=3790
6040 IF K$="-"THEN restore=3550
6050 IF K$="?"THEN restore=4330
6060 IF K$="'"THEN restore=4990
6070 IF K$="!"THEN restore=4590
6080 IF K$=":"THEN restore=3930
6090 IF K$=" "THEN restore=190
6100 IF K$=","THEN restore=3830
6110 chr=ASC(K$)
6120 ENDPROC
6130 :
6140 DEFPROCprintchr
6150 IF G=0 AND PX=0 THEN PRINT;
" ";
6160 IF G=0 AND PX=1 THEN PRINT;
"  ";
6170 IF G=1 AND PX=1 AND QZ=1 TH
EN PRINT;CHR$(chr);CHR$(chr);
6180 IF G=1 AND PX=1 AND QZ=2 TH
EN PRINT"@@";
6190 IF G=1 AND PX=1 AND QZ=3 TH
EN PRINT;"@";CHR$(chr);
```

```
 6200 IF G=1 AND P%=0 AND Q%=1 TH
EN PRINT;CHR$(chr);
 6210 IF G=1 AND P%=0 AND Q%=2 TH
EN PRINT;"@";
 6220 IF G=1 AND P%=0 AND Q%=3 TH
EN PRINT;"@";
 6230 ENDPROC
 6240 :
 6250 DEFPROCprint
 6260 READ G
 6270 IF G=99 THEN GOTO 6320
 6280 READ repet
 6290 FOR loop2=1 TO repet
 6300 PROCprintchr
 6310 NEXT loop2
 6320 ENDPROC
 6330 :
 6340 DEFPROCdisplay
 6350 CLS
 6360 VDU19,1,3,0,0,0,0,0
 6370 PRINT''SPC(8)"BANNER PRINTI
NG PROGRAM"
 6380 PRINTSPC(8)"----------------
---------"
 6390 PRINT'"        Written By W
ayne G Boyd"
 6400 PRINT'"....................
.....................";
 6410 PRINT'"Please your message.
"
 6420 PRINT'">";:PROCgetmess
 6430 PRINTTAB(0,12);
 6440 PRINT'"   1. Large, Letter
for Letter"
 6450 PRINT'"   2. Large, Bold"
 6460 PRINT'"   3. Large, Combina
tion"
 6470 PRINT'"   4. Small, Letter
for Letter"
 6480 PRINT'"   5. Small, Bold"
 6490 PRINT'"Please select type o
f print.  ";
 6500 ENDPROC
 6510 :
 6520 DEFPROCinput
 6530 g$=GET$
 6540 PRINTTAB(29,23);"      ";TA
B(29,23);g$;
 6550 IF g$="1" THEN P%=1:Q%=1
 6560 If g$="2" THEN P%=1:Q%=2
 6570 IF g$="3" THEN P%=1:Q%=3
 6580 IF g$="4" THEN P%=0:Q%=1
 6590 IF g$="5" THEN P%=0:Q%=2
 6600 IF g$>"5" OR g$<"1" THEN VD
U7:GOTO 6530
 6610 SOUND1,-15,165,5
 6620 CLS
 6630 PRINT''"   PRESS ANY KEY TO
 START PRINTING..";
 6640 G=GET
 6650 PRINT''''''''"   PRINTING..
..";'"          ";mess$;
 6660 ENDPROC
 6670 :
 6680 DEFPROCgetmess
 6690 mess$=""
 6700 REPEAT
 6710 G$=GET$
 6720 ch=ASC(G$)
 6730 IF ch=13 THEN GOTO 6760
 6740 IF ch=127 AND LEN(mess$)>0
THEN PRINTCHR$(127);:mess$=MID$(m
ess$,1,(LEN(mess$)-1)):GOTO 6760
 6750 IF (ch>64 AND ch<91) OR (ch
>31 AND ch<34) OR (ch=39) OR (ch>
43 AND ch<47) OR (ch=63) OR (ch=5
8) THEN mess$=mess$+G$:PRINTG$; E
LSE VDU7:GOTO 6710
 6760 UNTIL ch=13
 6770 ENDPROC
 6780 DEFPROCepson
 6790 VDU2
 6800 VDU1,27,1,58,1,0,1,0,1,0
 6810 VDU1,27,1,37,1,1,0
 6820 VDU1,27,1,38,1,0
 6830 VDU1,64,1,64
 6840 VDU1,139
 6850 VDU1,255,1,0,1,153,1,0,1,15
3,1,0,1,153,1,0,1,153,1,0,1,255
 6860 VDU3
 6870 ENDPROC
```

Listing 1

```
  10 REM ************************
******
  20 REM *  Banner printing prog
ram  *
  30 REM *
     *
  40 REM *  Written by Wayne G B
oyd  *
  50 REM *
     *
  60 REM *     (c) Electron User
     *
  70 REM *
     *
  80 REM ************************
******
  90 REM
 100 MODE 1
 110 DIM BLOCK 8
 120 PROCdisplay
 130 PROCprint
 140 PRINT"FINISHED..."
 150 END
 160 :
 170 :
 180 DEF PROCdisplay
 190 CLS
 200 REMPROCback
 210 PROCDBL("Banner Printing Pr
ogram",-5,2)
 220  COLOUR 2
 230 PROCDBL("==================
=====",-5,4)
 240 PROChighlight("Written by W
ayne G Boyd",220,800,1)
 250 COLOUR 2
 260 PRINT''''''''"Enter the mes
sage you want to print:-"
 270 INPUT">> "mess$
 280 COLOUR1
 290 PRINTTAB(0,16)"Enter hight
value (1-8) ";
 300 G$=GET$
 310 COLOUR 3
 320 IF G$<"1" OR G$>"8" THEN VD
U7:GOTO 300 ELSE PRINTG$:SOUND1,-
15,165,5
 330 hight=VAL(G$)
 340 COLOUR1
 350 PRINTTAB(0,19)"Enter width
value (1-8) ";
 360 G$=GET$
 370 COLOUR 3
 380 IF G$<"1" OR G$>"8" THEN VD
U7:GOTO 360 ELSE PRINTG$:SOUND1,-
15,165,5
 390 width=VAL(G$)
 400 PROChighlight("PRESS ANY KE
Y TO PRINT..",190,200,0)
 410 PRINTTAB(35,30);
 420 G=GET
 430 ENDPROC
 440 END
 450  DEFPROCDBL(A$,xX,yX)
 460 IFxX<0THENPRINTTAB((38-LENA
$)/2,yX);ELSEPRINTTAB(xX,yX);
 470 FORCH%=1TOLENA$
 480 KX=FNCHAR(ASCMID$(A$,CHX,1)
)
 490 VDU254,10,8,255,11
 500 NEXT
 510 ENDPROC
 520 DEF FNCHAR(CX)
 530 ?BLOCK=CX: AX=10: XX=BLOCK:
 YX=BLOCK DIV 256: CALL&FFF1
 540 FORJX=0TO1
 550 VDU23,JX+254
 560 FORIX=2TO9
 570 VDUBLOCK?(JX*4+IXDIV2)
 580 NEXT,
 590 =0
 600
 610 DEFPROChighlight(A$,XX,YX,C
X):VDU5:GCOLO,3:MOVEXX,YX-4:PRINT
A$:MOVEXX-8,YX:PRINTA$:MOVEXX+8,Y
X:PRINTA$:MOVEXX,YX+4:PRINTA$:GCO
LO,CX:MOVEXX,YX:PRINTA$:VDU4:ENDP
ROC
 620  DEFPROCprint
 630  CLS
 640 PRINTTAB(0,2);mess$
 650 VDU28,0,30,39,5
 660 y=(LEN(mess$)*32)
 670 PRINTTAB(0,10);
 680  VDU2
 690 FOR l=1 TO y STEP 4
 700 y=y-4
 710 FOR do=1 TO width
 720 FOR A=960 TO 928 STEP -4
 730 IF POINT(y,A)<>0 THEN PRINT
 $TRING$(hight,"*"); ELSE PRINT S
TRING$(hight," ");
 740 NEXT
 750 PRINT
 760 NEXT
 770 NEXT
 780 VDU3
 790 ENDPROC
```

# ADVICE ARENA

*Tips for every Electron user, from beginner to expert*

ACCIDENTALLY saving a file on top of another on a DFS format disc is simple to do and yet it's so easy to prevent. All you have to do is enter:

```
* ACCESS filename L
```

The file is then locked and, until it is unlocked, you can't save a file with the same name or erase it. Remember though, you can still format the disc, so the file is not completely safe. And as there's always a risk that your disc may become faulty you should always keep a backup.

To unlock a file you enter:

```
* ACCESS filename
```

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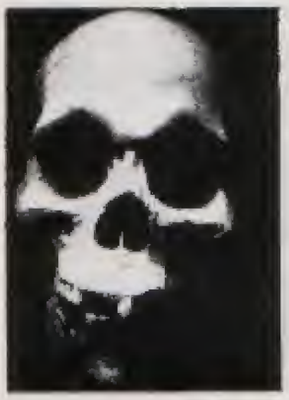
EU 6



# SCROLLING

**Can you become an ace pilot in this super-fast arcade blockbuster from Lyn Davies?**

**RADIUM is fast-scrolling arcade game set in the far future. Your peaceful world is under attack from the warlike Gort Empire and you have been chosen to pilot the only remaining ships.**

Gort rockets will destroy your city if you let them past. Not only is your home at risk, but the remote energy beam generators that power your ship will be damaged – too many hits and your ship will disintegrate.

Among the hail of missiles are occasional radium bombs and if these are shot a radium pod is released. If you collect 10 a Gort Skullship will investigate. These are powerful craft and must be disabled quickly: Not an easy task.

They usually spit radium bolts and are heavily armoured. Only an accurate shot into their rocket tubes will give them grief. If you are a good enough marksman and get 10 shots on target the skullship will then be disabled and you can move on to defend another sector.

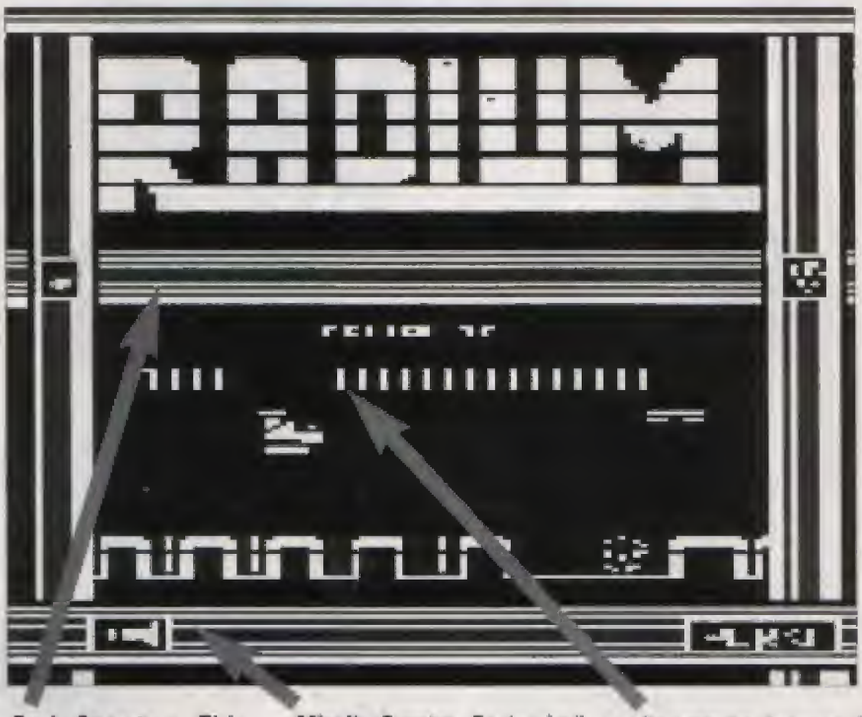
When you lose a life or beat a level your skill rating will be displayed on the aceo meter. If you manage a maximum rating you are either an ace pilot or a cheat.

The game loads in two parts, and if you are using tape it's best to save them on separate ones until they're working. They can then be combined on one tape. Note that the second listing must be saved as Radium1 as it is CHAINed by the first.

Remember to save the programs before trying to run them as they put data all over memory, and if you've made a mistake you could lose the copy in memory.

So type in the listings, strap yourself in, and prepare for action.

| KEYS | |
|---|---|
| Z | Left |
| X | Right |
| * | Up |
| ? | Down |
| Return | Fire |




***Pod Counter:*** *This increments as each pod is collected. Once it is filled with pods Guardian hits are noted.*

***Missile Counter:*** *Each missile you let through increases this counter by one. You lose a life when it reaches the maximum.*

*Contact with missiles or bouncing bombs from the rear will increase the score by eight points and the screen will flash to warn you.*

***Aceometer:*** *Appears if you lose a life or beat a level and gives you an idea how you are performing. After three lives are lost the New Pilot logo is shown.*

## Skullduggery

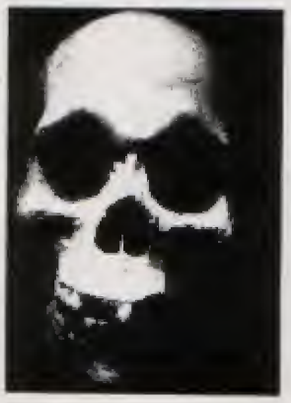
When you've collected 10 radium pods and the giant bolt-spitting skull appears the best technique is to get as close as possible just above the line of radium bolts. Then drop past the skull and shoot it in the mouth.

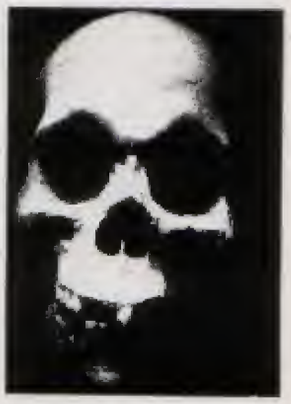
## WARNING

**The memory in the second listing is critical. Even a few extra spaces will make the program start overwriting the sprite data.**

**Note that for clarity the program has been listed using LISTO 1 so that a space is displayed between the line numbers and the lines. You should not put a space there when you key the listing in.**

# SKULLS!





**Listing I**

```
   10 REM RADIUM
   20 REM By Lyn Davies
   30 REM (c)Electron User
   40 MODE5:VDU23,1,0;0;0;0;:VDU1
9,3,6;0;
   50 VDU23,224,255,254,128,128,1
28,132,132,132,23,225,132,132,156
,188,128,128,128,0,23,226,0,1,1,1
,61,37,33,33,23,227,33,33,33,1,1,
1,127,255
   60 VDU5:GCOL0,129:CLG
   70 FORF=9DTO1024STEP92:FORE=16
TO1264STEP92:MOVEE,F:GCOL3,3:VDU2
24,10,8,225:GCOL3,1:VDU8,11,226,8
,10,227:NEXTE:NEXTF
   80 GCOL0,3:MOVE100,650:DRAW100
,20:PLOT85,1190,20:MOVE100,650:DR
AW1190,20:PLOT85,1190,650
   90 VDU4:COLOUR128:COLOUR2:PRIN
TTAB(6,4)" RADIUM  ":PRINTTAB(6,3
)"          ":PRINTTAB(6,5)"
   "
  100 GCOL0,2:MOVE100,20:DRAW100,
650:DRAW1190,650:GCOL0,0:MOVE100,
20:DRAW1190,20:DRAW1190,650
  110 COLOUR128:VDU28,2,27,17,14:
CLS:PRINT'"Please wait..."''"Load
ing and"''"relocating next"''"pro
gram."
  120 ENVELOPE1,1,4,-4,4,10,20,10
,126,0,0,-126,126,126:VDU28,2,27,
17,26
  130 FORE=&56CDTO&56F0
  140 READ num
  150 ?E=num:NEXT
  160 DATA240,15,0,6,7,6,20,48,11
2,112,112,0,3,0,112,7,128,8,0,0,2
1,149,149,149,132,240,240,1,8,0,2
40,15,0,0,0,0,136,196,234,238,0,2
40,225,14,0,0,128,8,0
  170 FORE=&568CTO&56CC:READ num:
?E=num:NEXT:REM pipe No1
  180 DATA192,194,74,66,66,0,66,6
6,66,66,0,66,66,112,112,3,0
  190 FORE=&56ABTO&56BB:READ num:
?E=num:NEXT:REM pipe No2
  200 DATA48,112,67,66,66,0,66,66
,66,66,0,66,66,194,194,12,0
  210 FORE=&569ATO&56AA:READ num:
?E=num:NEXT:REM pipe No3
  220 DATA240,240,15,0,0,0,0,0,0,
0,0,0,0,0,0,0
  230 FORE=&5689TO&5699:READ num:
?E=num:NEXT:REM No4 pipe
  240 DATA0,0,0,0,0,0,0,0,0,0,0,0
,0,240,240,15,0
  250 FORE=&5678TO&5688:READ num:
?E=num:NEXT:REM No5 pipe
  260 DATA16,49,0,115,115,0,247,2
47,0,115,7,0,0,240,240,15,0
  270 FORE=&5667TO&5677:READ num:
?E=num:NEXT:REM No6 pipe
  280 DATA8,12,0,142,142,0,142,14
2,0,142,14,0,0,240,240,15,0
  290 FORE=&5656TO&5666:READ num:
?E=num:NEXT:REM No7 blank
  300 DATA66,195,195,6,0,240,15,0
,240,15,0,255,0,240,240,15,0
  310 FORE=&5645TO&5655:READ num:
?E=num:NEXT:REM No8 feature
  320 DATA70,70,70,70,70,0,70,70,
70,70,70,70,0,240,240,15,0
  330 FORE=&5634TO&5644:READ num:
?E=num:NEXT:REM No9 mine
  340 DATA16,81,213,221,17,12,5,1
,0,98,49,49,0,240,240,15,0
  350 FORE=&5623TO&5633:READ num:
?E=num:NEXT:REM No10 mine
  360 DATA128,168,171,171,136,3,1
0,8,0,6,4,4,0,240,240,15,0
  370 FORE=&5528TO&5622:READ num:
?E=num:NEXT:REM screen data
  380 DATA4,4,4,4,4,4,4,4,4,4,4,4
,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,
4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
,3,3,3,3,3,3,3,1,4,2,1,2,1,8,4,4,
4,4,9,10,4,4,4,4,2,1,2,1,4,4,4,2,
3,3,1,4,4,2,3,3,1,4,8,4,4,5,6,7,4
,4,4,2,3,3,3
  390 DATA3,3,3,1,4,4,4,4,4,4,4,9
,10,4,4,8,8,8,4,4,4,4,4,4,5,6,7,4
,4,4,2,1,2,1,2,1,2,1,4,4,2,1,8,4,
2,1,4,2,3,3,3,1,4,4,4,4,5,6,7,4,4
,4,4,4,4,4,4,2,3,3,3,3,3,3,3,1,8,
2,3,1,8,2,3,1,8,2,3,1,8,2,3,1,4,4
,4,4,9,10
  400 DATA4,2,3,3,1,2,1,2,1,2,3,3
,3,1,4,4,8,4,4,4,4,4,4,4,4,4,4,4,
4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
,4,4,4,4,4,4,4
  410 FORE=&54E7TO&5527:READ num:
?E=num:NEXT:REM Guardian
  420 DATA0,16,16,48,48,115,0,0,2
40,255,255,255,241,255,17,29,0,96
,113,49,49,49,243,15,29,17,17,241
,255,239,206,29,0,160,0,0,0,0,0,0
,35,163,35,35,35,35,35,35,0,0,160
,0,240,255,255,15,35,35,163,35,23
1,207,142,12,0
  430 FORE=&5406TO&54E6:READ num:
?E=num:NEXT:REM Pod Carrier
  440 DATA16,81,213,221,17,12,5,1
,128,168,187,187,136,3,10,8,0
  450 FORE=&54C5TO&5405:READ num:
?E=num:NEXT:REM Missile
  460 DATA0,32,0,240,15,0,2,0,48,
112,0,112,7,0,112,3,0
  470 FORE=&54B4TO&54C4:READ num:
?E=num:NEXT:REM Crystal
  480 DATA0,17,51,35,3,1,0,0,0,13
6,12,12,12,8,0,0,0
  490 FORE=&54ABTO&54B3:READ num:
?E=num:NEXT:REM Rocket
  500 DATA66,66,66,66,0,195,66,6,
0
  510 FORE=&547ATO&54AA:READ num:
?E=num:NEXT:REM Explo
  520 DATA0,12,74,105,52,122,120,
52,18,18,18,52,122,105,15,4,1,13,
15,135,182,210,210,241,244,224,24
0,210,30,15,4,4,0,8,11,30,227,195
,134,132,74,105,180,135,141,132,1
2,8,0
  530 FORE=&5459TO&5479:READ num:
?E=num:NEXT:REM Jaw
  540 DATA0,160,0,0,0,0,160,0,35,
163,35,35,35,35,163,35,240,255,25
5,15,0,0,0,0,231,207,142,12,0,0,0
,0,0
  550 FORE=&5430TO&5458:READ num:
?E=num:NEXT:REM Space
  560 DATA224,128,0,14,0,34,238,0
,224,160,0,14,0,136,136,0,224,160
,0,14,0,170,170,0,224,128,0,8,0,1
36,238,0,224,128,0,14,0,136,238,0
,0
  570 FORE=&9AETO&9BE:READ num:?E
=num:NEXT:REM Skull Shot
  580 DATA0,16,48,48,48,17,0,0,0,
128,68,68,196,136,0,0,0
  590 FORE=&9BFTO&9FF:READ num:?E
=num:NEXT:REM Next Pilot
  600 DATA224,160,0,10,0,170,170,
```

➤

## Subscription tapes

**These listings are for the game illustrated, but with a simplified background screen. The display shown needs too much data to print in a magazine, but is on the tape that is sent to subscribers.**

**The listings are also on the tape printed here.**

**If you are not a subscriber but would like a copy of the enhanced version you can obtain one for £2.50 from the author, Mr L. Davies, 5 Kingsgate Close, Church Hill North, Redditch, Worcs B98 9LJ.**

```
0,224,128,0,12,0,136,238,0,128,12
8,0,8,0,170,85,0,144,144,0,9,0,15
3,17,0,208,80,0,13,0,17,17,0,64,6
4,0,4,0,68,119,0,112,80,0,5,0,85,
119,0,112,32,0,2,0,34,34,0,0
  610 REPEAT UNTIL INKEY(300)
  620 CHAIN"Radium1"
  630 END
```

***Listing II***

```
   10 IFPAGE>&E00 GOTO 770
   20 VDU23,1,0;0;0;0;:COLOUR128:
VDU4,28,2,27,17,14:CLS:DIM code 3
500:PROCmach:CALLog:END
   30 DEFPROCmach:FORpass=0TO2STE
P2:P%=code:[OPTpass
   40 .og:LDA#1:STA&92F:STA&923:L
DA#0:STA&931:JSRlvl:JSRuno:RTS:.u
no:JSRvert:hf:JSRball:JSRscr:JSRs
ync:JSRspc:JSRmess:JSRcor:JSRrac:
JMPhf:RTS
   50 .lj:LDA&931:CMP#3:BEQtym:RT
S:.tym:LDA#0:STA&935:.kz:JSRflr:J
SRtba:INC&935:LDA&935:CMP#10:BNEk
z:JSRog:RTS:.go:JSRlj:JSRset:JSRh
mm:JSRlvl:JSRvar:JSRcht:JSRball:J
SRwml:JSRrkt:JSRloop:RTS
   60 .var:LDA#&20:STA&70:LDA#&70
:STA&71:LDA#&60:STA&76:LDA#&77:ST
A&77:LDA#&A0:STA&78:LDA#&78:STA&7
9:LDA#&28:STA&7A:LDA#&55:STA&7B:L
DA#&D0:STA&7C:LDA#&7D:STA&7D:LDA#
&10:STA&80:LDA#&6D:STA&81:LDA#&88
:STA&88:LDA#&7C:STA&89
   70 LDA#4:STA&928:LDA#0:STA&925
:LDA#4:STA&928
   80 LDA#11:STA&900:STA&929:LDA#
&D:STA&922:STA&91E:STA&9D1:STA&9D
2:STA&9D5:STA&910:STA&915:STA&917
:STA&91B:STA&91C:STA&91D:LDA#10:S
TA&9D4:LDA#&00:STA&84:LDA#&58:STA
&85:LDA#&9D:STA&86:LDA#&68:STA&87
:LDA#49:STA&91F:LDA#1:STA&926:STA
&927:RTS
   90 .loop:JSRlvl:.lop:JSRblk:JS
Rlsim:JSRx:JSRz:JSRu:JSRd:JSRntr:
JSRball:JSRtyy:JSRism:JSRsync:JSR
ck:JSRhit:JSRbad:JSRqqq:JSRscr:JS
Rhrt:JMPlop:RTS
  100 .ball:LDA&70:STA&72:LDA&71:
STA&73:LDX#0:LDY#0:.pw:LDA&56CD,X
:STA(&72),Y:JSRtst:INX:INY:CPY#&1
0:BNEpw:LDY#0:LDA&70:CLC:ADC#8:ST
A&72:LDA&71:ADC#0:STA&73:.wp:LDA&
56CD,X:STA(&72),Y:JSRtst:INX:INY:
CPY#&10:BNEwp
  110 LDY#0:LDA&70:CLC:ADC#&10:ST
A&72:LDA&71:ADC#00:STA&73:.ct:LDA
&56CD,X:STA(&72),Y:JSRtst:INX:INY
:CPY#&10:BNEct:RTS
  120 .expl:LDA&70:STA&72:LDA&71:
STA&73:LDX#0:LDY#0:.hl:LDA&547A,X
:STA(&72),Y:JSRtst:INX:INY:CPY#&1
0:BNEhl:LDY#0:LDA&70:CLC:ADC#8:ST
A&72:LDA&71:ADC#0:STA&73:.lh:LDA&
547A,X:STA(&72),Y:JSRtst:INX:INY:
CPY#&10:BNElh
  130 LDY#0:LDA&70:CLC:ADC#&10:ST
A&72:LDA&71:ADC#00:STA&73:.vt:LDA
&547A,X:STA(&72),Y:JSRtst:INX:INY
:CPY#&10:BNEvt:RTS
  140 .xpl:LDA&7E:STA&72:LDA&7F:S
TA&73:LDX#0:LDY#0:.zo:LDA&547A,X:
EOR(&72),Y:STA(&72),Y:JSRtst:INX:
INY:CPY#&10:BNEzo:LDY#0:LDA&7E:CL
C:ADC#8:STA&72:LDA&7F:ADC#0:STA&7
3:.zp:LDA&547A,X:EOR(&72),Y:STA(&
72),Y
  150 JSRtst:INX:INY:CPY#&10:BNEz
p:LDY#0:LDA&7E:CLC:ADC#&10:STA&72
:LDA&7F:ADC#00:STA&73:.zu:LDA&547
A,X:EOR(&72),Y:STA(&72),Y:JSRtst:
INX:INY:CPY#&10:BNEzu:RTS
  160 .guard:LDY#0:LDX#0:.sy:LDA&
54E7,X:STA&6D10,Y:INX:INY:CPY#&1D
:BNEsy:LDY#0:.ys:LDA&54E7,X:STA&6
E50,Y:INX:INY:CPY#&1D:BNEys:LDY#0
:.ao:LDA&54E7,X:STA&6F90,Y:INX:IN
Y:CPY#&10:BNEao:LDY#0:.oa:LDA&54E
7,X:STA&70DD,Y:INX:INY:CPY#&10:BN
Eoa:RTS
  170 .jaw:LDY#0:LDX#0:.gj:LDA&54
59,X:STA&6F90,Y:INX:INY:CPY#&10:B
NEgj:LDY#0:.jg:LDA&5459,X:STA&70D
0,Y:INX:INY:CPY#&10:BNEjg:RTS
  180 .bad:LDA&91D:CMP#&FF:BEQsss
:LDA&90C:CMP#8:BNEpod:BEQmisl:RTS
:.sss:LDA&7C:STA&72:LDA&7D:STA&73
:LDX#0:LDY#0:.zz:LDA&9AE,X:STA(&7
2),Y:INX:INY:CPY#&10:BNEzz:RTS
  190 .misl:LDA&7C:STA&72:LDA&7D:
STA&73:LDX#0:LDY#0:.kz:LDA&54B6,X
:STA(&72),Y:INX:INY:CPY#&10:BNEkz
:RTS:.pod:LDA&7C:STA&72:LDA&7D:ST
A&73:LDX#0:LDY#0:.la:LDA&54C5,X:S
TA(&72),Y:INX:INY:CPY#&10:BNEla:R
TS
  200 .dop:LDA&91C:CMP#&FF:BNEtpo
:RTS:.tpo:LDA&84:STA&72:LDA&85:ST
A&73:LDX#0:LDY#0:.eb:LDA&54B4,X:S
TA(&84),Y:INX:INY:CPY#&10:BNEeb:R
TS
  210 .klb:LDA&84:STA&72:LDA&85:S
TA&73:LDX#0:LDY#0:.cc:LDA#&00:STA
(&84),Y:INX:INY:CPY#&10:BNEcc:RTS
:.hmm:LDA&923:CMP#2:BEQrrk:RTS
  220 .rrk:LDA&8A:STA&72:LDA&8B:S
TA&73:LDY#0:.mm:LDA&9AE,Y:STA(&72
),Y:INY:CPY#&10:BNEmm:RTS:.bnc:LD
A&8A:STA&72:LDA&8B:STA&73:LDY#0:.
oo:LDA&9AE,Y:STA(&72),Y:INY:CPY#&
10:BNEoo:RTS
  230 .ftr:LDA&8A:STA&72:LDA&8B:S
TA&73:LDY#0:.mm:LDA#&00:STA(&72),
Y:INY:CPY#&10:BNEmm:RTS:.yyy:LDA&
929:CMP&904:BEQxxx:RTS
  240 .xxx:LDA&900:CLC:ADC#1:STA&
92C:LDA&9D0:CLC:ADC#2:STA&92D:LDA
&928:CMP&900:BEQnok:LDA&928:CMP&9
2C:BEQnok:LDA&928:CMP&920:BEQnok:
RTS
  250 .nok:JSRflr:LDA#0:STA&92E:J
SRflr:.ux:JSRkkk:INC&92E:LDA&92E:
CMP#8:BNEux:RTS:.ckc:LDA&927:CMP#
1:BEQbrt:BNEtrb:RTS:.brt:LDA&928:
CMP#31:BEQder:BNErrd:RTS
  260 .rrd:LDA&8A:CLC:ADC#&D8:STA
&8A:LDA&8B:ADC#&00:STA&8B:INC&928
:RTS:.trb:LDA&928:CMP#4:BEQred:BN
Efuu:RTS
  270 .fuu:LDA&8A:SEC:SBC#&08:STA
&8A:LDA&8B:SBC#&00:STA&8B:DEC&928
:RTS:.der:LDA#0:STA&927:RTS:.red:
LDA#1:STA&927:RTS:.bck:JSRftr:JSR
bkk:JSRckc:JSRbnc:JSRyyy:RTS:.bkk
:LDA&926:CMP#1:BEQbup:BNEbdn:RTS
  280 .bup:LDA&929:CMP#15:BEQtyp:
BNEpud:RTS:.typ:LDA#0:STA&926:RTS
:.pud:LDA&8A:SEC:SBC#&40:STA&8A:L
DA&8B:SBC#&01:STA&8B:INC&929:RTS:
.bdn:LDA&929:CMP#4:BEQpyt:BNEndb:
RTS:.pyt:LDA#1:STA&926:RTS
  290 .ndb:LDA&8A:CLC:ADC#&40:STA
&8A:LDA&8B:ADC#&01:STA&8B:DEC&929
:RTS
  300 .lsim:LDA&7C:STA&72:LDA&7D:
STA&73:LDX#0:LDY#0:.hm:LDA#&00:ST
A(&72),Y:JSRtst:INX:INY:CPY#&08:B
NEhm:LDY#0:LDA&7C:CLC:ADC#8:STA&7
2:LDA&7D:ADC#0:STA&73:.mh:LDA#&00
:STA(&72),Y:JSRtst:INX:INY:CPY#&0
8:BNEmh:RTS
  310 .blk:LDA&7D:STA&72:LDA&71:S
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(&72),Y:JSRtst:INX:INY:CPY#&10:BN
Ege:LDY#0:LDA&7D:CLC:ADC#8:STA&72
:LDA&71:ADC#0:STA&73:.eg:LDA#&00:
STA(&72),Y:JSRtst:INX:INY:CPY#&10
:BNEeg
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Y#&10:BNEhe:RTS
  330 .tst:STY&74:LDA&72:CLC:ADC&
74:STA&75:LDA&75:AND#7:CMP#7:BEQb
ot:RTS:.bot:LDA&72:CLC:ADC#&38:ST
A&72:LDA&73:ADC#1:STA&73:RTS:.spc
:LDA#&0F:LDX#1:LDY#0:JSR&FFEE:LDA
#&81:LDX#&9D:LDY#&FF:JSR&FFF4:BCS
cps:RTS
  340 .cps:LDA#&0C:JSR&FFEE:JSRsy
nc:JSRsync:JSRgo:RTS:.x:LDA#&0F:L
DX#1:LDY#0:JSR&FFEE:LDA#&81:LDX#&
BD:LDY#&FF:JSR&FFF4:BCSeft:RTS
  350 .eft:LDA&900:CMP#26:BNElelt
:RTS:.left:INC&900:LDA&7D:CLC:ADC
#8:STA&7D:LDA&71:ADC#&00:STA&71:R
TS:.d:LDA#&0F:LDX#1:LDY#0:JSR&FFE
E:LDA#&81:LDX#&97:LDY#&FF:JSR&FFF
4:BCSnd:RTS:.nd:LDA&904:CMP#06:BE
Qsms:CMP#&03:BNEdn:RTS:.sms:JSRpo
p:RTS
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&40:STA&7D:LDA&71:ADC#&01:STA&71:
RTS:.ntr:LDA&910:BEQrtn:RTS:.rtn:
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&81:LDX#&B6:LDY#&FF:JSR&FFF4:BCSgz:RTS:.gz:LDA#1:STA&910:RTS
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FFEE:LDA#&81:LDX#&9E:LDY#&FF:JSR&
FFF4:BCSite:RTS:.ite:LDA&900:CMP#
05:BNErite:RTS:.rite:DEC&900:LDA&
7D:SEC:SBC#8:STA&7D:LDA&71:SBC#&0
0:STA&71:LDA&9D7:RTS
  380 .w:LDA#&0F:LDX#1:LDY#0:JSR&
FFEE:LDA#&81:LDX#&B7:LDY#&FF:JSR&
FFF4:BCSpu:RTS:.pu:LDA&904:CMP#15
:BNEup:RTS:.up:INC&904:LDA&7D:SEC
:SBC#&4D:STA&7D:LDA&71:SBC#&01:ST
A&71:RTS
  390 .sync:LDA#&13:JSR&FFF4:RTS:
.et:LDY#0:.te:LDA&5645,Y:STA(&76)
,Y:INY:CPY#&08:BNEte:LDY#0:.qf:LD
A&564C,Y:STA(&78),Y:INY:CPY#&08:B
NEqf:RTS
  400 .ni:LDY#0:.in:LDA&5634,Y:ST
A(&76),Y:INY:CPY#&08:BNEin:LDY#0:
.hx:LDA&5638,Y:STA(&78),Y:INY:CPY
#&08:BNEhx:RTS:.tn:LDY#0:.nt:LDA&
5623,Y:STA(&76),Y:INY:CPY#&08:BNE
nt:LDY#0:.xh:LDA&562A,Y:STA(&78),
Y:INY:CPY#&08:BNExh:RTS
  410 .sx:LDY#0:.xs:LDA&5667,Y:ST
A(&76),Y:INY:CPY#&08:BNExs:LDY#0:
.fq:LDA&566E,Y:STA(&78),Y:INY:CPY
#&08:BNEfq:RTS
  420 .prnt:LDA(&7A),Y:CMP#6:BEQs
x:CMP#7:BEQsv:CMP#8:BEQet:CMP#9:B
EQni:CMP#10:BEQtn:CMP#1:BEQon:CMP
#2:BEQwt:CMP#3:BEQtr:CMP#4:BEQrf:
CMP#5:BEQfv:RTS
  430 .tr:LDY#0:.rt:LDA&569A,Y:ST
A(&76),Y:INY:CPY#&08:BNErt:LDY#0:
.t:LDA&56A1,Y:STA(&78),Y:INY:CPY#
&08:BNEt:RTS:.sv:LDY#0:.ka:LDA&56
56,Y:STA(&76),Y:INY:CPY#&08:BNEka
:LDY#0:.ak:LDA&565D,Y:STA(&78),Y:
INY:CPY#&08:BNEak:RTS
  440 .on:LDY#0:.no:LDA&56BC,Y:ST
A(&76),Y:INY:CPY#&08:BNEno:LDY#0:
.o:LDA&56C3,Y:STA(&78),Y:INY:CPY#
&08:BNEo:RTS:.wt:LDY#0:.tw:LDA&56
AB,Y:STA(&76),Y:INY:CPY#&08:BNEtw
:LDY#0:.w:LDA&56B2,Y:STA(&78),Y:I
NY:CPY#&08:BNEw:RTS
  450 .rf:LDY#0:.fr:LDA&5689,Y:ST
```

```
A(&76),Y:INY:CPY#&08:BNEfr:LDY#0:
.r:LDA&5690,Y:STA(&78),Y:INY:CPY#
&08:BNEr:RTS:.fv:LDY#0:.vf:LDA&56
78,Y:STA(&76),Y:INY:CPY#&08:BNEvf
:LDY#0:.f:LDA&567F,Y:STA(&78),Y:I
NY:CPY#&08:BNEf:RTS
  460 .scr:LDX#0:.gp:JSRprnt:JSRm
ore:JSRerom:INX:CPX#&20:BNEgp:JSR
orig:JSRmrk:RTS:.orig:LDA#&77:STA
&77:LDA#&60:STA&76:LDA#&78:STA&79
:LDA#&A0:STA&78:RTS
  470 .more:LDA&76:CLC:ADC#&08:ST
A&76:LDA&77:ADC#&00:STA&77:LDA&78
:CLC:ADC#&08:STA&78:LDA&79:ADC#&0
0:STA&79:RTS:.erom:LDA&7A:CLC:ADC
#&01:STA&7A:LDA&7B:ADC#&00:STA&7B
:RTS
  480 .mrk:LDA&7A:SEC:SBC#&1F:STA
&7A:LDA&78:SBC#&00:STA&78:INC&905
:LDA&905:CMP#&00:BEQkrm:RTS:.krm:
LDA#0:STA&905:LDA#&28:STA&7A:LDA#
&55:STA&7B:RTS:.hit:LDA&900:CMP#9
0A:BEQtih:RTS:.tih:LDA&904:CMP#90
D:BEQpop:LDX&9D4:DEX:CPX&900:BEQp
op:RTS
  490 .pop:INC&931:JSRabt:.da:JSR
scr:JSRsync:JSRoop:JSRspc:JMPda:R
TS:.oop:LDA&904:CMP#3:BNEpoo:JSRt
ak:RTS:.poo:JSRsync:JSRexpl:JSRsy
nc:JSRblk:JSRite:JSRite:JSRdn:RTS
  500 .tak:JSRroc:INC&909:LDA&90B
:CMP#14:BEQpoi:CMP#15:BEQgrd:CMP#
30:BEQjw:RTS:.poi:JSRcor:JMPtak:R
TS
  510 .grd:JSRmess:JSRguard:RTS:.
jw:LDA#0:STA&90B:JSRjaw:RTS:.ism:
LDA&7C:SEC:SBC#&08:STA&7C:LDA&7D:
SBC#&00:STA&7D:DEC&90A:LDA&90A:CM
P#&01:BEQwww:RTS:.www:JSRkkk:JSRw
ml:RTS:.uu:JSRkkk:LDA#&88:STA&7C:
LDA#&6F:STA&7D:LDA#11:STA&90D:RTS
  520 .wml:INC&90C:LDA&90C:CMP#10
:BEQnil:LDA#29:STA&90A:LDA&91C:CM
P#&FF:BEQuu:INC&90E:LDA&90E:CMP#1
:BEQbr:CMP#2:BEQrb:CMP#3:BEQff:CM
P#4:BEQlf:CMP#5:BEQjr:CMP#6:BEQhv
:CMP#7:BEQjq:CMP#8:BEQqj:RTS
  530 .nil:LDA#0:STA&90C:JMPwml:R
TS:.br:LDA#&00:STA&7C:LDA#&70:STA
&7D:LDA#10:STA&90D:RTS:.rb:LDA#&1
0:STA&7C:LDA#&6D:STA&7D:LDA#13:ST
A&90D:RTS:.ff:LDA#&50:STA&7C:LDA#
&73:STA&7D:LDA#8:STA&90D:RTS
  540 .lf:LDA#&90:STA&7C:LDA#&6F:
STA&7D:LDA#11:STA&90D:RTS:.jr:LDA
#&D0:STA&7C:LDA#&6B:STA&7D:LDA#14
:STA&90D:RTS:.hv:LDA#&90:STA&7C:L
DA#&74:STA&7D:LDA#7:STA&90D:RTS:.
jq:LDA#&50:STA&7C:LDA#&6E:STA&7D:
LDA#12:STA&90D:RTS
  550 .qj:LDA#&10:STA&7C:LDA#&72:
STA&7D:LDA#0:STA&90E:LDA#9:STA&90
D:RTS:.tab:EQUD&FFF10000:EQUD&000
60004:RTS:.abt:LDA#7:LDX#tab MOD2
56:LDY#tab DIV256:JSR&FFF1:RTS:.b
ar:EQUD&00D1D001:EQUD&0003005D:RT
S
  560 .tba:LDA#7:LDX#bat MOD256:L
DY#bat DIV256:JSR&FFF1:RTS:.gx:LD
A#7:LDX#xg MOD256:LDY#xg DIV256:J
SR&FFF1:RTS:.xg:EQUD&FFF10001:EQU
D&0001001D:RTS:.ck:LDA&910:CMP#1:
BEQfire:CMP#2:BEQfer:RTS
  570 .fire:JSRgx:LDA&904:STA&913
:LDA&904:SEC:SBC#1:STA&912:LDA&90
D:CLC:ADC#3:STA&911:LDA#70:CLC:AD
C#&58:STA&7E:LDA#71:ADC#&01:STA&7
F:LDY#0:LDA#&61:STA(&7E),Y:LDA#2:
STA&910:RTS
  580 .fer:JSRcol:INC&911:LDA&911
:CMP#31:BEQxn:CMP#32:BEQid:LDY#0:
LDA#&00:STA(&7E),Y:LDA&7E:CLC:ADC
#&08:STA&7E:LDA&7F:ADC#&00:STA&7F
:LDY#0:LDA#&61:STA(&7E),Y:JSRcol:
RTS
  590 .id:LDA#0:STA&910:JSRhrt:RT
S:.xn:LDA&91C:CMP#&FF:BEQnx:RTS:.
nx:LDA&912:CMP#11:BEQjju:CMP#10:B
EQjju:RTS:.jju:JSRfls:JSRtnc:INC&
91E:LDA&91E:CMP#10:BEQujj:RTS:.uj
j:JSRblk:INC&923:JSRuno:RTS
  600 .col:LDA&911:CMP&90A:BEQges
:RTS:.ges:LDA&912:CMP&90D:BEQseg:
LDA&913:CMP&90D:BEQseg:RTS:.seg:J
SRinx:JSRxpl:JSRsync:JSRxpl:JSRid
:JSRabt:JSRdsa:JSRwml:RTS
  610 .inx:LDA&92F:CMP#208:BEQwd:
INC&92F:.wd:RTS:.dsa:LDA&90C:CMP#
8:BEQppp:RTS:.ppp:JSRklb:LDA&90A:
CLC:ADC#&02:STA&918:LDA&90D:STA&9
19:LDA#1:STA&917:LDA&7C:STA&84:LD
A&7D:STA&85:JSRdop:RTS
  620 .hrt:LDY#0:LDA#&00:STA(&7E)
,Y:RTS:.mess:LDX#0:.vo:LDA&5430,X
:EOR&7400,X:STA&7400,X:INX:CPX#40
:BNEvo:RTS:.qqq:LDA&917:BNEqqp:RT
S:.qpp:LDA&900:CMP&918:BEQtot:RTS
  630 .qqp:JSRdop:LDA&904:CMP&919
:BEQqpp:LDA&904:SEC:SBC#&01:STA&9
1A:LDA&91A:CMP&919:BEQqpp:RTS:.to
t:JSRtnc:JSRklb:LDA#0:STA&917:STA
&918:STA&919:JSRtba:RTS
  640 .cnt:JSRlg:LDX#0:.gg:LDY#0:
.hh:LDA#&60:STA(&86),Y:INY:CPY#4:
BNEhh:LDA&86:CLC:ADC#&10:STA&86:L
DA&87:ADC#&00:STA&87:INX:CPX#10:B
NEgg:JSRlg:RTS
  650 .lg:LDA#&90:STA&86:LDA#&68:
STA&87:LDA#0:STA&918:RTS:.tnc:LDY
#0:.ff:LDA#&00:STA(&86),Y:INY:CPY
#4:BNEff:LDA&86:CLC:ADC#&10:STA&8
6:LDA&87:ADC#&00:STA&87:INC&91B:L
DA&91B:CMP#10:BEQten:RTS
  660 .rd:LDA#19:JSR&FFEE:LDA#1:J
SR&FFEE:LDA#1:JSR&FFEE:LDA#0:JSR&
FFEE:JSR&FFEE:JSR&FFEE:RTS:.bl:LD
A#19:JSR&FFEE:LDA#1:JSR&FFEE:LDA#
5:JSR&FFEE:LDA#0:JSR&FFEE:JSR&FFE
E:JSR&FFEE:RTS
  670 .gn:LDA#19:JSR&FFEE:LDA#1:J
SR&FFEE:LDA#2:JSR&FFEE:LDA#0:JSR&
FFEE:JSR&FFEE:JSR&FFEE:RTS:.ten:L
DA#&FF:STA&91C:STA&91D:JSRfls:JSR
guard:JSRfls:JSRcnt:RTS
  680 .fls:JSRabt:LDA#19:JSR&FFEE
:LDA#0:JSR&FFEE:LDA#7:JSR&FFEE:LD
A#0:JSR&FFEE:JSR&FFEE:JSR&FFEE:JS
Rsync:JSRsync:LDA#19:JSR&FFEE:LDA
#0:JSR&FFEE:LDA#0:JSR&FFEE:LDA#0:
JSR&FFEE:JSR&FFEE:JSR&FFEE:RTS
  690 .flr::LDA#19:JSR&FFEE:LDA#0
:JSR&FFEE:LDA#5:JSR&FFEE:LDA#0:JS
R&FFEE:JSR&FFEE:JSR&FFEE:JSRsync:
JSRsync:LDA#19:JSR&FFEE:LDA#0:JSR
&FFEE:LDA#0:JSR&FFEE:LDA#0:JSR&FF
EE:JSR&FFEE:JSR&FFEE:RTS
  700 .lvl:LDY#0:.rr:LDA&98F,Y:EO
R&6B38,Y:STA&6B38,Y:INY:CPY#64:BN
Err:RTS:.rkt:LDY#0:.ol:LDA#&46:ST
A&7C90,Y:INY:CPY#152:BNEol:RTS
  710 .kkk:LDA&88:CLC:ADC#&01:STA
&88:LDA&89:ADC#&00:STA&89:LDY#0:.
tp:LDA#&00:STA(&88),Y:INY:CPY#8:B
NEtp:INC&922:LDA&922:CMP#152:BEQt
yh:RTS
  720 .tyh:JSRpop:RTS:.ees:LDA#1:
STA&923:JMPtyy:RTS:.tyy:LDA&923:C
MP#1:BEQfft:CMP#2:BEQqwe:CMP#3:BE
Qsee:CMP#4:BEQees:RTS:.fft:LDA#0:
STA&925:JSRrd:RTS:.qwe:JSRgn::JSR
ftr:JSRmvv:JSRrrk:JSRgtr:RTS
  730 .mvv:LDA&8A:CLC:ADC#&08:STA
&8A:LDA&8B:ADC#&00:STA&8B:INC&924
:LDA&924:CMP#32:BEQset:JSRftr:RTS
:.hjk:JSRftr:JSRnok:RTS
  740 .see:LDA#0:STA&925:JSRbl:JS
Rbck:RTS:.set:LDA#&A0:STA&8A:LDA#
&6E:STA&8B:LDA#4:STA&924:RTS:.gtr
:LDA&924:CMP&900:BEQyto:RTS:.yto:
LDA&904:CMP#11:BEQhjk:CMP#12:BEQh
jk:RTS
  750 .cor:LDY#0:.pp:LDA#&01:STA&
6D7D,Y:INY:CPY#208:BNEpp:LDY#0:.t
c:LDA&5440,Y:STA&7080,Y:INY:CPY#&
18:BNEtc:RTS:.roc:LDY#0:.ii:LDA#&
E1:STA&6D7D,Y:INY:CPY#92F:BNEii:R
TS
  760 ]:NEXTpass:ENDPROC
  770 *KEY0 *T.|MOX=PAGE-&E00:FOR
I%=PAGE TO TOP STEP4:!(I%-O%)=!I%
:NEXT:PAGE=&E00|MOLD|MRUN|M
  780 *FX138,0,128
```

## ADVICE ARENA

*Tips for every Electron user, from beginner to expert*

ERROR reports on the Electron are quite user friendly, but don't rely on them too much. While they give a guide to where your mistake lies, remember that they can be misleading, as this sample program shows:

```
10 INPUTnuber
20 PRINTnumber
```

This will report that there is an unknown variable in line 20 while in fact the error is that *number* is spelt wrongly in line 10. Another common error that reports a wrong line is illustrated by:

```
10 FOR loop = 1 to 5
20 READ number(loop)
30 NEXT
40 DATA 1,2,3,4
```

Although the fault is that either there is a data item missing in line 40 or the loop should only go up to 4 in line 10, this reports that the program is out of data in line 20.

So think about it if you can't see a mistake in the line where an error is reported. See if any of the statements are dependant on other parts of the program.

# Cheat it again, Joe

Volume 4

**The second of the series in which Mark Gidley, author of the Cheat It Again series, helps you hit those high scores**

IN this three part series we are revealing the 18 cheats that would have been on a fourth volume of Cheat It Again Joe, the popular series from Impact software that helps you get to the parts of games that were previously impossible to reach. Here's another six for your collection.

There's cheats for the Sam versions of Hopper, Hunchback, and Imogen. There's also updates for the original Galaforce 2 and Joe Blade 1 and 2.

So just type in the listings and save them to your own blank disc or tape – not the one containing the origial software.

Then run them and follow the on-screen instructions for more enjoyment from your favourite games.

## Galaforce 2 Cheat

```
Galaforce 2 cheat

Infinite lives              (Y/N) : Yes
Infinite smart bombs        (Y/N) : Yes

Press <SHIFT> for Smart Bomb.

OK - Insert Galaforce 2 tape, forward
     to GAME?? to avoid waiting and
     press any key ...
```

```
  10 REM Galaforce 2 cheat
  20 REM Electron version
  30 :
  40 MODE4:PRINT'"Galaforce 2 ch
eat"'
  50 PROCmc
  60 PROCask("Infinite lives",in
lives)
  70 PROCask("Infinite smart bom
bs",inbombs)
  80 PRINT'"Press <SHIFT> for Sm
art Bomb."'"OK - Insert Galaforc
e 2 tape, forward        to GAME?
? to avoid waiting and          p
ress any key ...":A=GET:VDU7
  90 FORI%=0TO&2D0 STEP4:I%!&400
0=I%!&7A00:NEXT
 100 MODE5:FORI%=0TO&200 STEP4:I
%!&7A00=I%!&4000:NEXT:VDU28,0,17,
19,14:PRINT"Press play":CALL&7A00
 110 END
 120 DEFPROCask(A$,A%)
```

```
 130 PRINT;A$;STRING$(26-LENA$,"
");"(Y/N) : ";:A$=GET$:IF A$="Y"
 THEN PRINT;"Yes" ELSE PRINT;"No"
:?A%=&60
 140 ENDPROC
 150 DEFPROCmc
 160 FORI%=0 TO 2 STEP2
 170 P%=&7A00
 180 [OPTI%
 190 LDY#game DIV 256:LDX#game M
OD 256:JSR&FFF7
 200 LDY#game2 DIV 256:LDX#game2
 MOD 256:JSR&FFF7
 210 LDY#D:LDX#&4E:LDA#&63:STA&7
6:STA&77
 220 LDA#&D1:STA&78
 230 .loop1 LDA&E00,Y:EOR&76:DEC
&77:EOR&77:EOR&78:STA&E00,Y
 240 INC&78:LDA&78:SEC:SBC#&5F:E
OR&77:STA&78:EOR&76:STA&76:EOR#&E
4:STA&77:EOR&78:INY:BNEloop1:INCl
oop1+2:INCloop1+13:DEX:BNEloop1
 250 JSRinlives:JSRinbombs
 260 JMP&58D0
 270 .inlives LDA#&AD:STA&11F1:R
TS
 280 .inbombs LDA#&AD:STA&1C45:R
TS
 290 .game EQUS("LOAD GAME"+CHR$
&83+CHR$&7F+" 9D0"+CHR$13)
 300 .game2 EQUS("LOAD GAME2"+CH
R$&84+CHR$&7F+" E00"+CHR$13)
 310 ]:NEXT
 320 ENDPROC
```

# Joe Blade *Cheat*

```
Joe Blade cheat

Infinite strength          (Y/N) : Yes
Immortal                   (Y/N) : No

OK - Insert Joe Blade tape and press
     play ...
```

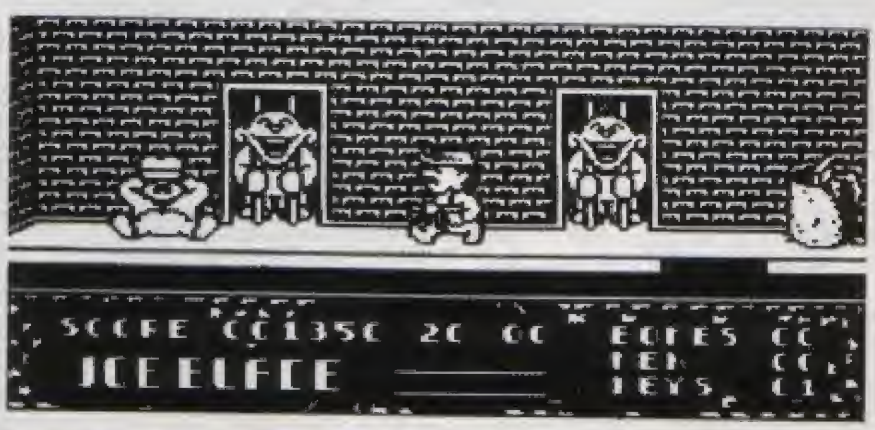
```
   10 REM Joe Blade cheat
   20 REM Electron version
   30 MODE4:PRINT'"Joe Blade chea
t"'
   40 PROCmc
   50 PROCask("Infinite strength"
,inen):PROCask("Immortal",imm)
   60 ?&220=code MOD 256:?&221=co
de DIV 256:?&2400=0:*FX14,4
   70 PRINT'"OK - Insert Joe Blad
e tape and press          play ...
"':VDU7
   80 *FX14,4
   90 PAGE=&E00:CHAIN"GAME"
  100 END
  110 DEFPROCask(A$,A%)
  120 PRINT;A$;STRING$(25-LENA$,"
");"(Y/N) : ";:A$=GET$:IF A$="Y"
 THEN PRINT;"Yes" ELSE PRINT;"No"
:?A%=&60
  130 ENDPROC
  140 DEFPROCmc
  150 FORI%=0 TO 2 STEP2
  160 P%=&2600
  170 [OPTI%:.code
  180 PHP:PHA:LDA&2400:CMP#&FF:BN
Eout
  190 JSRimm:JSRinen
  200 LDA#13:LDX#4:JSR&FFF4
  210 .out PLA:PLP:RTS
  220 .imm LDA#&EA:STA&1B36:LDA#&
A9:STA&1B37:LDA#0:STA&1B38:RTS
  230 .inen LDA#&EA:STA&1FCD:LDA#
&A9:STA&1FC1:LDA#&01:STA&1FC2:RTS
  240 ]:NEXT
  250 ENDPROC
```

# Joe Blade 2 *Cheat*

```
Joe Blade 2 cheat

Infinite strength          (Y/N) : Yes
Immortal                   (Y/N) : No

OK - Insert Joe Blade 2 tape and
     press play ...
```



```
   10 REM Joe Blade 2 cheat
   20 REM Electron version
   30 MODE4:PRINT'"Joe Blade 2 ch
eat"'
   40 PROCmc
   50 PROCask("Infinite strength"
,inen):PROCask("Immortal",imm)
   60 ?&220=code MOD 256:?&221=co
de DIV 256:?&2400=0:*FX14,4
   70 PRINT'"OK - Insert Joe Blad
e 2 tape and              press pl
ay ..."'
   80 *FX14,4
   90 PAGE=&E00:CHAIN"GAME"
  100 END
  110 DEFPROCask(A$,A%)
  120 PRINT;A$;STRING$(25-LENA$,"
");"(Y/N) : ";:A$=GET$:IF A$="Y"
 THEN PRINT;"Yes" ELSE PRINT;"No"
:?A%=&60
  130 ENDPROC
  140 DEFPROCmc
  150 FORI%=0 TO 2 STEP2
  160 P%=&2600
  170 [OPTI%:.code
  180 PHP:PHA:LDA&2400:CMP#&FF:BN
Eout
  190 JSRimm:JSRinen
  200 LDA#13:LDX#4:JSR&FFF4
  210 .out PLA:PLP:RTS
  220 .imm LDA#&EA:STA&1B36:LDA#&
A9:STA&1B37:LDA#0:STA&1B38:RTS
  230 .inen LDA#&EA:STA&1FCD:LDA#
&A9:STA&1FC1:LDA#&01:STA&1FC2:RTS
  240 ]:NEXT
  250 ENDPROC
```

# Hopper Cheat

```
   10 REM Hopper cheat
   20 REM Electron (Sam 6) versio
n
   30 :
   40 MODE4:PRINT'"Hopper cheat"'
   50 PROCmc
   60 PROCask("Infinite lives",in
lives)
   70 PRINT'"OK - Insert Hopper t
ape and press            play ...
"'
   80 VDU7,21:*FX18
   90 *K.1 LOAD"HOP1"|F|M|400CALL&
1800|MRUN|F|M
  100 *FX138,0,129
  110 END
  120 DEFPROCask(A$,A%)
  130 PRINT;A$;STRING$(26-LENA$,"
 ");"(Y/N) : ";:A$=GET$:IF A$="Y"
 THEN PRINT;"Yes" ELSE PRINT;"No"
:?A%=&60
  140 ENDPROC
  150 DEFPROCmc
  160 FORI%=0 TO 2 STEP2
  170 P%=&1800
  180 [OPTI%
  190 LDA#un MOD 256:STA&22D:LDA#
un DIV 256:STA&221:LDA#14:LDX#4:J
SR&FFF4
  200 LDY#load DIV 256:LDX#load M
OD 256
  210 JSR&FFF7
```

```
Hopper cheat

Infinite lives            (Y/N) : Yes

OK - Insert Hopper tape and press
     play ...
```

```
  220 LDA#13:LDX#4:JSR&FFF4
  230 SEI:LDA&2D4:STAbyte:LDA&205
:STAbyte+1:LDA#&80:STA&204:LDA#3:
STA&205:CLI
  240 JMP&3000
  250 .un LDA&3CA:AND#254:STA&3CA
:RTS
  260 .load
  270 ]:$P%="LOAD HOPMC"+CHR$13
  280 P%=&380
  290 [OPTI%:PHP:PHA:JSRinlives:P
LA:PLP:JMP(byte):.byte NOP:NOP
  300 .inlives LDA#4:STA&41B:RTS
  310 ]:NEXT
  320 ENDPROC
```

# Imogen Cheat

```
   10 REM Imogen cheat
   20 REM Electron version
   30 :
   40 MODE4:PRINT'"Imogen cheat"'
:PROCmc
   50 PROCask("Infinite transform
ations",fnt)
   60 PRINT'"OK - Insert Imogen t
ape and press"'"     play ..."'

   70 CALLinit
   80 PAGE=&E00:CHAIN""
   90 END
  100 DEFPROCask(A$,A%)
  110 PRINT;A$;STRING$(26-LENA$,"
 ");"(Y/N) : ";:A$=GET$:IF A$="Y"
 THEN PRINT;"Yes" ELSE PRINT;"No"
:?A%=&60
  120 ENDPROC
  130 DEFPROCmc
  140 FORI%=0TO2 STEP2
  150 P%=&900
  160 [OPTI%
  170 .inter
  180 PHP:PHA:TXA:PHA:TYA:PHA
  190 LDA&2D0D:CMP#0:BNEout
  200 JSRint
  210 LDA#13:LDX#4:JSR&FFF4
  220 .out PLA:TAY:PLA:TAX:PLA:PL
P:RTS
  230 .int LDA#&EA:STA&2C98:STA&2
C99:STA&2C9A:RTS
  240 .init LDA#1:STA&2D0D
  250 LDA#inter MOD 256:STA&22D:L
DA#inter DIV 256:STA&221:LDA#14:L
DX#4:JSR&FFF4
  260 RTS
  270 ]
  280 NEXT
  290 ENDPROC
```

```
Infinite transformations  (Y/N) :
 Yes

OK - Insert Imogen tape and press
     play ...
```

# Hunchback Cheat

```
   10 REM Hunchback cheat
   20 REM Electron (Sam 6) versio
n
   30 :
   40 MODE4:PRINT'"Hunchback chea
t"'
   50 PROCmc
   60 PROCask("Infinite lives",in
lives)
   70 PRINT'"OK - Insert Hunchbac
k tape and press         play ...
"'
   80 VDU7,28,0,20,30,16:CALL&110
0
   90 END
  100 DEFPROCask(A$,A%)
  110 PRINT;A$;STRING$(26-LENA$,"
 ");"(Y/N) : ";:A$=GET$:IF A$="Y"
 THEN PRINT;"Yes" ELSE PRINT;"No"
:?A%=&60
  120 ENDPROC
  130 DEFPROCmc
  140 FORI%=0 TO 2 STEP2
  150 P%=&1100
  160 [OPTI%
  170 LDA#un MOD 256:STA&220:LDA#
un DIV 256:STA&221:LDA#14:LDX#4:J
SR&FFF4
```

```
Hunchback cheat

Infinite lives            (Y/N) : Yes

OK - Insert Hunchback tape and press
     play ...
```

```
  180 LDY#load DIV 256:LDX#load M
OD 256
  190 JSR&FFF7
  200 LDA#13:LDX#4:JSR&FFF4
  210 JSRinlives:JMP&3C00
  220 .inlives LDA#&AD:STA&3633:L
DA#2:STA&3639:RTS
  230 .un LDA&3CA:AND#254:STA&3CA
:RTS
  240 .load
  250 ]:$P%="LOAD HUNCHMC"+CHR$13
  260 NEXT
  270 ENDPROC
```

**Next month:**

*In the final instalment you can look forward to coverage of:*

- Killer Gorilla 2 (Sam version)
- Last Ninja
- Orbital
- Pipeline
- Repton Infinity
- Zenon

# 7 good reasons why YOU should read

# THE MICRO USER

★ **Listings:** Many type-in programs – from exciting games to time saving utilities – that are featured in *The Micro User* will work on your Electron.

★ **Reviews:** If you use your Electron as an all purpose computer you'll find that many products evaluated are compatible with the Electron.

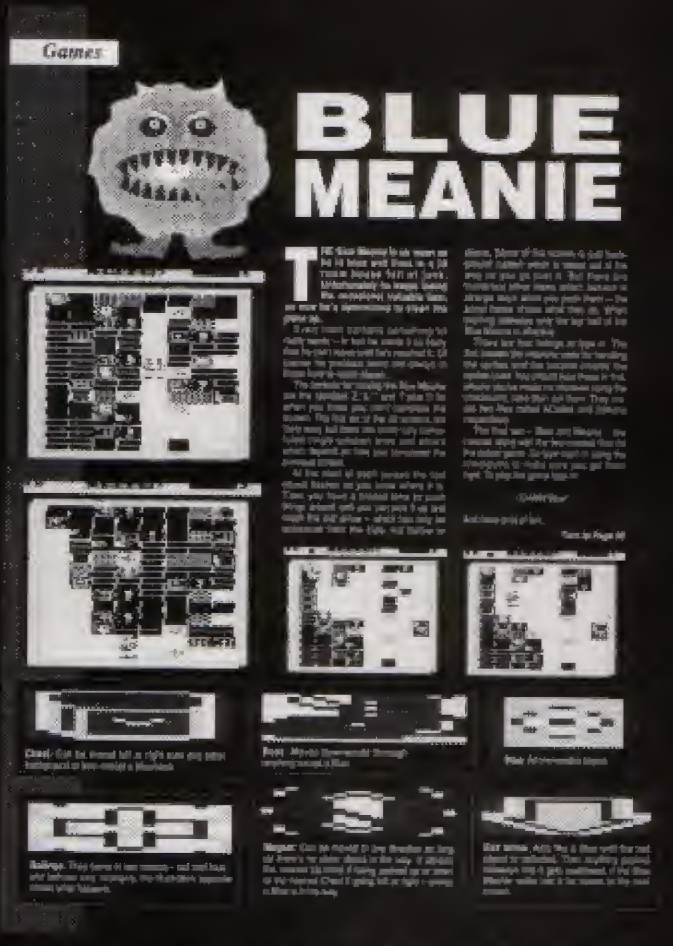
★ **Adverts:** From printers to paper, you'll find lots of products suitable to add to your Electron advertised in the pages of *The Micro User*.

★ **Learning:** The easy-to-follow hands-on articles and tutorial series in *The Micro User* are often applicable to Electron users.

★ **Letters:** Lots of the hints, tips and facts on the letters pages will help you make the most of your Electron.

★ **Adventures:** The Mad Hatter gives unlimited help with the quests: An invaluble source of information for Electron adventurers.

★ **Arcade Games:** Tips from Hac Man – one of the country's leading games experts – will often help Electron arcade addicts.




*Blue Meanie – One of three great type-ins featured in the July edition of* The Micro User *– a games special issue – that will work on your Electron.*

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# ADVENTURES

**By Pendragon**

# The classic collection

IT seems an eon since we last looked at the adventures which you, the readers, vote as your favourites for the Electron. Well here it is again, and the latest one reflects probably the greatest depth of classic games ever assembled for our trusty old micro.

In many ways the chart below is a rearrangement of the last one, but with some interesting additions and surprising omissions.

This Top Twenty in some ways reaffirms my long held belief that cream always rises to the top. And most of the adventures here do hold the real title of classics.

It is warming to see the likes of Classic Adventure and Woodbury End re-emerge as favourites some six years after they were first released.

It is however, somewhat perplexing to find that really great games such as The Hunt, Philosopher's Quest, Golden Voyage and The Puppet Man have either slipped from gamers' memories or do not hold the sway they perhaps deserve.

Back there I made passing mention of Larsoft's The Puppet Man, and this brings to mind a pleasant call I took on the dungeon's trimphone last week.

Geoff Larsen's ringing tones told me that like Lazarus, Larsoft has now been reborn and Geoff is trading in all his old titles, plus perhaps a new one just around the corner.

The Rising of Salandra, Wychwood, The Nine Dancers, Puppet Man and Hex are now all available from Larsoft's new address at 25 Lancashire Road, Bishopston, Bristol BS7 9DL.

Meanwhile, responses to my request for readers to write in and tell me about the most irksome or problematic points they have come across in Electron text adventures, continue unabated.

Nia Griffith writes to say that she has been continually foxed by the riddles in Acornsoft's Castle of Riddles.

These have often been the subject of mail I have received during the past four years, so to help you Nia, and others who may be stymied, here goes:

- **What everyone overlooks?** ***NOSE***
- **What a rich man has and wants more of, and a fat man has but doesn't want?** ***POUNDS***
- **What gets wetter as it dries?** ***TOWEL***
- **Little Nancy Etticoat, with a white petticoat, with red nose, the longer she stands, the shorter she grows?** ***CANDLE***
- **Lives in winter, dies in summer, and grows with its roots upwards?** ***ICICLE***
- **The beginning of eternity and the end of time and space?** ***E***

Quite simple once you know the answers, isn't it!

Mark French says that he still can't operate the vacuum cleaner successfully in Robico's enormous Enthar Seven.

This is truly a difficult mechanical problem with a tricky but simple solution:

Examine Vacuum Cleaner, Remove Dust Bag from Vacuum Cleaner, Exam Dust Bag, Stick Plaster on Dust Bag, Attach Dust Bag to Vacuum Cleaner and Insert Power Cell into Vacuum Cleaner.

Now just go North and Down, and clean the dust with your fully charged and fully repaired Vacuum Cleaner.

I must thank Jeremy Watson for his full and concise solution to Acornsoft's Quondam. This has enabled me to finish this adventure and a copy of Colisoft's Programmer's Revenge is now winging its way to Jeremy as a token of my gratitude.

Meantime, while you are all scratching your heads, I continue my series of maps to some of the most difficult adventure games ever released for the Electron.

This month I present part two of a full set of plans to Adventuresoft's Kayleth.

That's it for now, so until June is just a memory, happy adventuring.

## Readers' Hall of Fame

**Colossal Adventure** *Sheila Beattie*

SAY PLUGH, go South, Down, East to the brink of a clean pit, Down to the icy water and fill your bottle. Now return Up.

Go West, West to the large dusty room, Down to the complex junction and West to Bedquilt. Now continue West into the Swiss Cheese room and DROP BOTTLE.

To exit you must go North-West to the Oriental room. You may need to try this procedure two or three times before it is successful.

Journey North on to the wide path, West into the alcove, DROP LAMP, DROP AXE. Go East into the Plover room and GET EMERALD. Return West and GET LAMP, GET AXE.

Go North-West, South, South-East and East into the Soft room, and GET PILLOW. Travel West, North-East, East, Up, East, Up, North and SAY PLUGH.

DROP EMERALD, SAY PLUGH, SAY PLOVER and go North-East into the dark room. GET PYRAMID and go South into the Plover room. Now SAY PLOVER and SAY PLUGH, DROP PYRAMID and SAY PLUGH again.

Go South, Down, West, Down, West, West, North-West and GET VASE. Continue South-East, North-East, East, Up, East, Up, North and SAY PLUGH.

DROP PILLOW, DROP VASE, SAY XYZZY and GET ROD. Now go West, West, West, Down, West, East, WAVE ROD, East and Down. Travel South-West to the secret E/W corridor, go West and kill the oriental dragon. GET RUG and go North, North. SAY PLUGH, DROP RUG, DROP ROD. SAY PLUGH again.

Now go South, South, East, West, West and GET DIAMOND. Continue East, East, Down, West, West to the cross-over passages. The pirate will appear at some point here, and when he does you must immediately journey South to the west end of the featureless hall.

*(Continued next month)*

**Super Gran** *Steve Gray*

Return to inventor Black's house with your find. Go South, East, South, South, East, ENTER HOUSE and DROP the part of the RAY

## Reader's Top Twenty

| | | | |
|---|---|---|---|
| 1 | Enthar Seven | Robico | 97% |
| 2 | Blood of the Mutineers | Robico | 96% |
| 3 | Acheton | Topologika | 95% |
| 4 | Kingdom of Hamil | Topologika | 93% |
| 5 | Village of Lost Souls | Robico | 92% |
| 6 | The Wheel of Fortune | Epic | 91% |
| 7= | Myorem | Robico | 88% |
| 7= | Stranded | Heyley | 88% |
| 9 | Rick Hanson | Robico | 86% |
| 10 | The Lost Crystal | Epic | 85% |
| 11 | Woodbury End | Shards | 84% |
| 12 | Avon | Topologika | 82% |
| 13 | Sphinx Adventure | Acornsoft | 81% |
| 14 | Oxbridge | Tynesoft | 79% |
| 15= | Quest for the Holy Grail | Epic | 77% |
| 15= | Twin Kingdom Valley | Bug Byte | 77% |
| 17 | Project Thesius | Robico | 74% |
| 18 | Classic Adventure | Robico | 73% |
| 19 | The Nine Dancers | Larsoft | 72% |
| 20 | Dreamtime | Heyley | 69% |

machine You must now find the rest of the machine. Go North, East, ENTER BOAT and ROW BOAT. LEAVE the BOAT, BREATH IN, HOLD BREATH and SWIM DOWN.

Get the broken MACHINE you find there and SWIM UP. ENTER the BOAT and ROW the BOAT back to the shore and LEAVE the BOAT. Once more return to inventor Black's house. Go West, ENTER HOUSE and DROP the MACHINE.

You now have only the blueprints for the machine to find, so USE the invisibility MACHINE to become invisible, go North, West and GET the POST and POLE VAULT into the bedroom once more.

You are now in the bedroom where the false cries of help came from. OPEN the WARDROBE and ENTER the WARDROBE. Go down the secret staircase, West, South and GET the SHOVEL, go South again and GET the SCULPTURE.

Once you have these go North, North, East, West and ENTER the narrow CRACK. Dig once, DROP the SHOVEL and GET the BLUEPRINTS for the ray machine.

Now you have to get off the beach so THROW the ROPE UP the CLIFF and CLIMB the ROPE to the cliff tops above. Go South, West and ENTER the HOUSE and FIX the MACHINE.

Your powers are now fully restored but you still have to recover the stolen treasures. So go North, East and GO RAILWAY to witness the getaway of the criminals. GO RAILWAY once more and go West and ENTER the house.

Continue South, ENTER the SKIMMER and FLY UP. Wait for the balloon to appear and THROW the large DART at the balloon, causing it to crash. You should now LAND the skimmer and LEAVE the SKIMMER.

## Cheat and poke

What do you do when you are really stuck in a text adventure? Well, the answer is, you cheat! Not that I have ever stooped to such devious ploys, I should add!

Anyway, to help all you lesser mortals this section contains useful pokes, procedures and tips to help you get into the innards of a number of Electron text adventures.

### Dodgy Geezers

This game uses text compression and holds its vocabulary in cryptic form, so hacking at this one can be a little tricky. However, the following decompiler sent to me by Bill Trevelyan, may help.

First set PAGE to &5600 and then

```
*LOAD D2
```

for part one of the game, or

```
*LOAD DODGY2
```

for part two.

Now LOAD DG/VOC and put end=&5D47 in Line 40 for part one, or end=&5DC4 for part two. Then all you have to do is enter RUN and then press Return.

The vocabulary is printed out in columns giving the first four letters of each word followed by its index number in Hex.

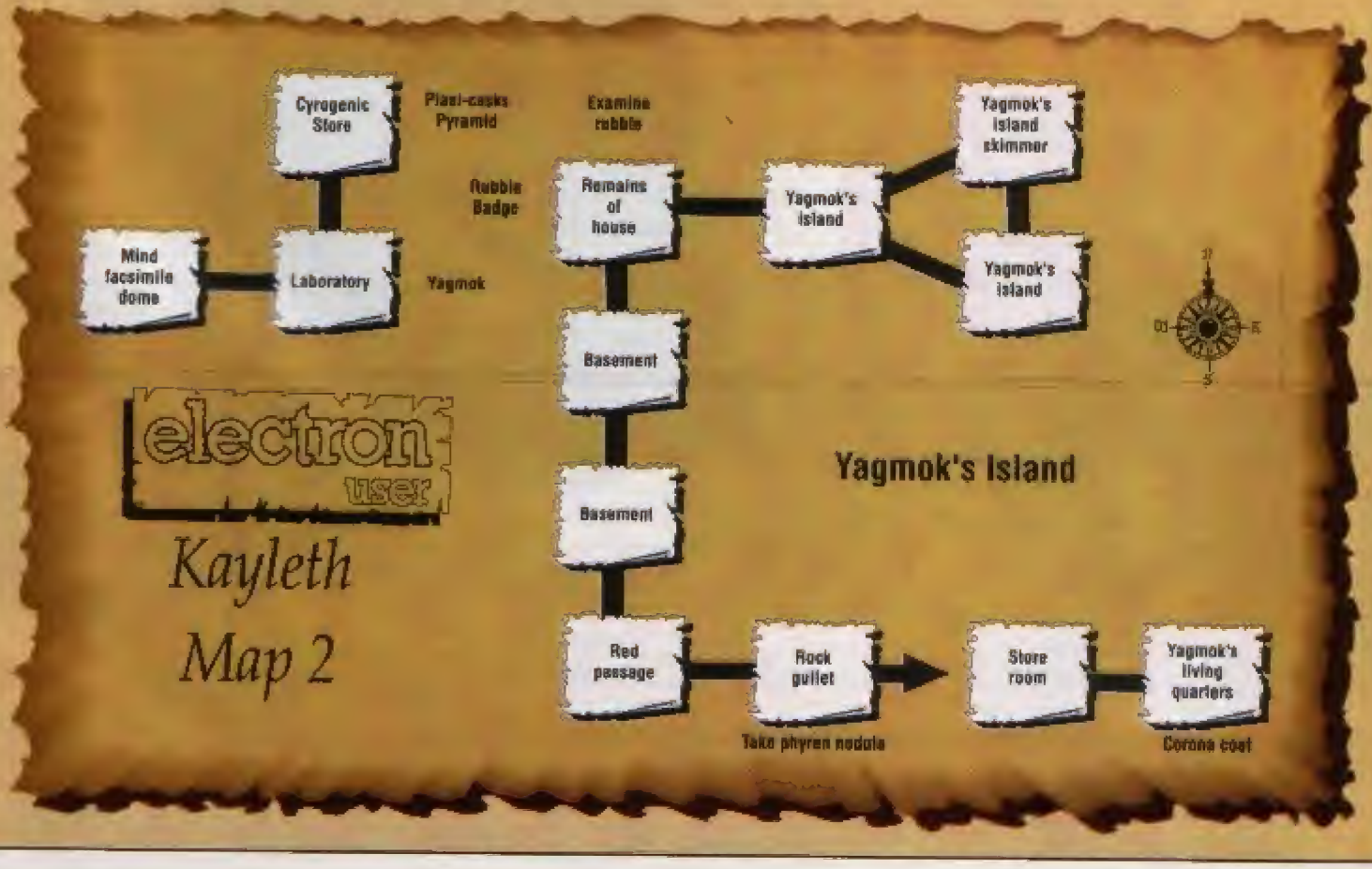
```
 10 REM Program DG/VOC
 20 :
 30 HIMEM=&5A00
 40 end=&xxxx
 50 A%=0
 60 FOR I%=1 TO &3FF
 70 I%?&5A00=I%?&ED0ED0&42
 80 NEXT
 90 PRINT'"V O C A B U L A R Y"
100 PRINT STRING$(19,"="):PRINT
110 FOR J%=&5A00 TO end
120 PRINT"   ";
130 FOR K%=0 TO 3
140 IF ?(J%+K%)>=32 AND ?(J%+K%
)<127 PRINT CHR$(J%+K%);ELSE PRI
NT CHR$32;
150 NEXT
160 IF J%?4<16 PRINT " 0";~J%?4
;" "; ELSE PRINT " ";~J%?4;" ";
170 NEXT
180 PRINT
190 END
```

*Dodgy Geezers decompiler*

Go North, North, East and GO RAILWAY to the wreckage of the balloon. EXAMINE the WRECKAGE and GET the PEARL of Pinnel's End and the Mayoral CHAIN.

Once you have retrieved the stolen items you must return them to their rightful places. GO RAILWAY again, West, West, North, North, North and ENTER the TOWN HALL and DROP the CHAIN. Leave the Town Hall by going South and East and Enter the MUSEUM and DROP the SCULPTURE and the PEARL of Pinnel's End. You have completed Super Gran.

● *Next month in the Cheat and Poke section I will poke about inside Twin Kingdom Valley.*



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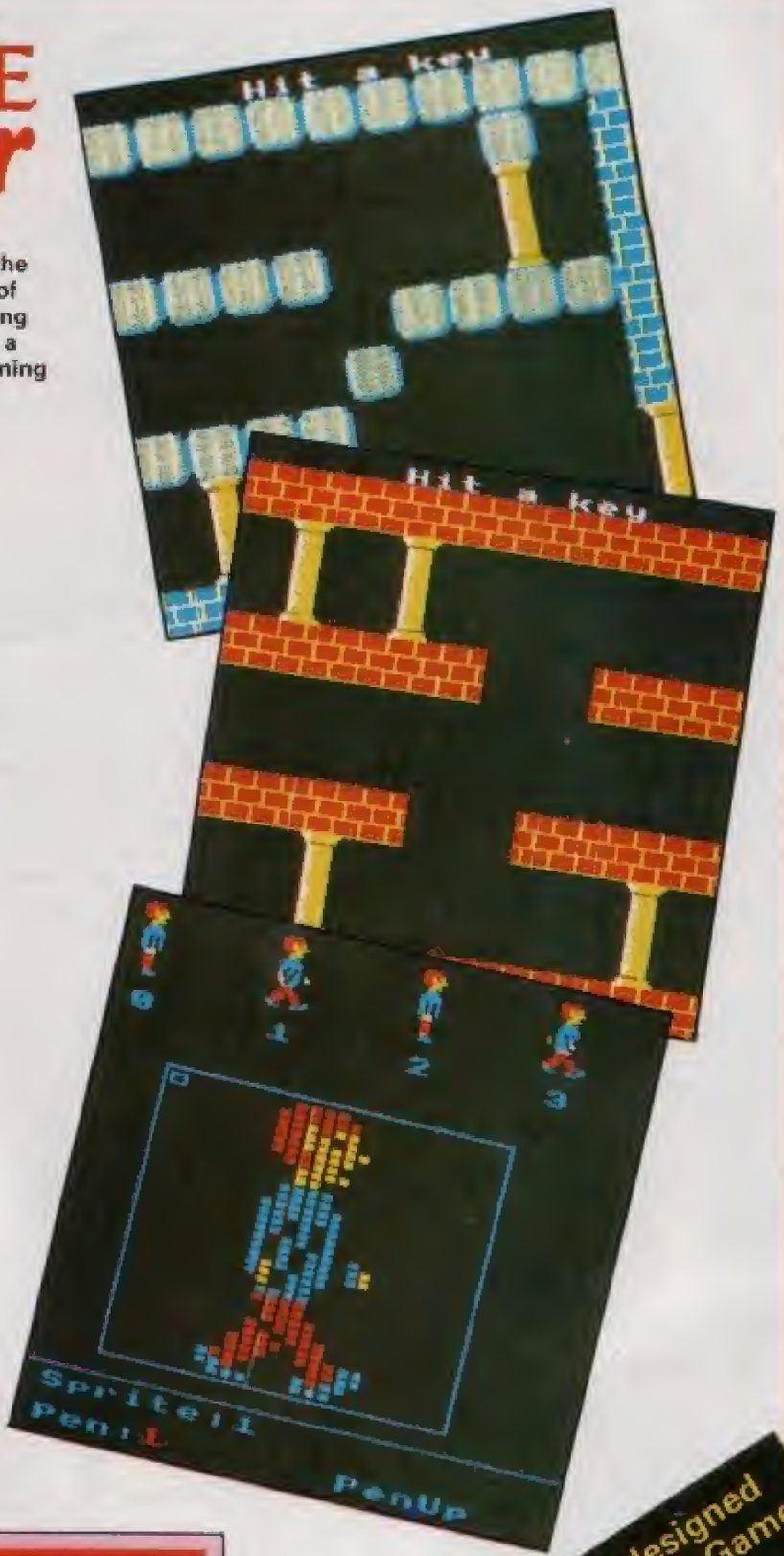


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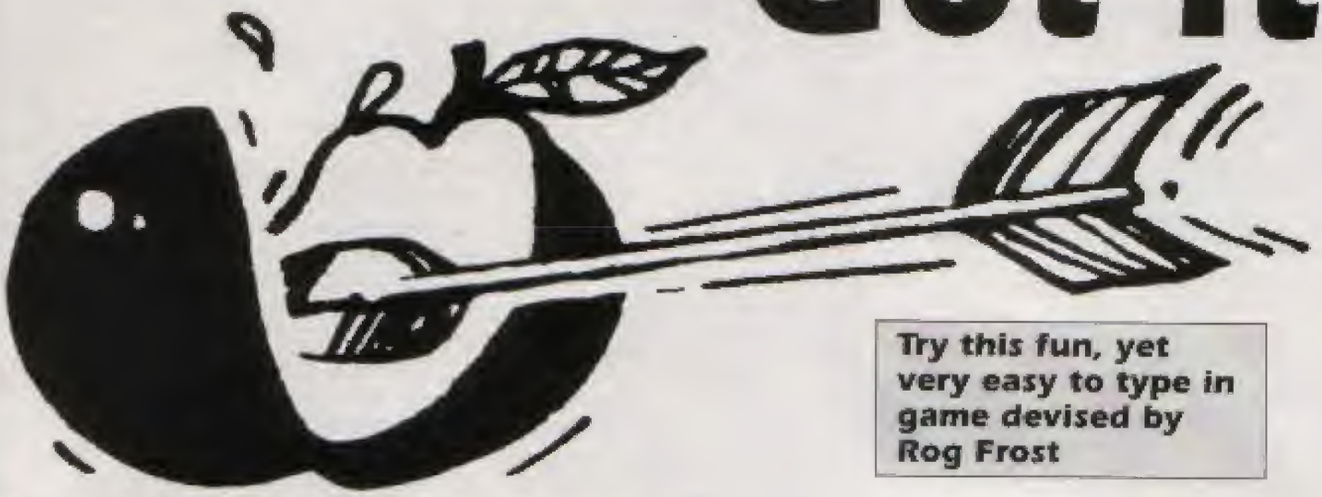
# Got It!



**Try this fun, yet very easy to type in game devised by Rog Frost**

**The idea of Got It! is to hit as many of the moving targets as you can in just one minute. You steer the flying arrow which has Up, Down, Left and Right controls and when you think you are directly above the target you blast away using the fire key. A direct hit will score you 1,000 points but the score is reduced by 100 each time you press the fire key.**

Life would be simple if that was all, but there are a couple of problems. Although you can steer the flying arrow, it always keeps moving – and diagonally at that. If it reaches the edge of the screen it bounces and, of course, it can't fire when pointing upwards.

Another snag is that the target moves faster than the arrow, which makes it doubly difficult to score a hit. Apart from losing points, firing also takes time and with only a minute, each second is a precious commodity that mustn't be wasted.

Got It! is designed to be a quick, fun game where lots of people can have a turn without a long wait. Also, it's so short that typing it in isn't too much of a bind.

The program structure is fairly simple. FX calls are used to set up the bounce sounds, ensure Caps Lock is on and disable the joystick port. Using the *FX16,0 call can really speed up games on the Electron.

Next come procedures to print the instructions, to create the various shapes used in the game and to set up a number of variables. Then there is the main action of the game.

Perhaps the most important line is 640, which controls the speed and is set to suit an average player.

If things move too fast – or you want to play it on a different Acorn micro – line 640 can be altered to slow it down.

This is done by listing the line and then copying it all but using a higher number than the 2 which is in the line. Remember to save any altered version of the program.

A useful facility is the ability to select your favoured keys – any of the number, letter or symbol ones. Return and the spacebar are also options for the fire key.

While the program is short it is designed to be personalised. Why not add an extra routine to allow players to select the game speed from within the program?

Also a different scoring system could easily be used – perhaps with points scored for near misses. The graphics and the sound could be altered as well.

Whether you stick to the original version or make adjustments, happy firing. Got it?

```
  10 REM THE 'GOT IT GAME'
  20 REM By Rog Frost
  30 REM (c) Electron User
  40 MODE1
  50 *FX213,250
  60 *FX214,1
  70 *FX202
  80 *FX16,0
  90 PROCinstruct
 100 PROCchars
 110 PROCsetscores
 120 REPEAT
 130 TIME=0:REPEAT
 140 PROCgamevars
 150 PROCgame
 160 UNTILTIME>6000
 170 PROCscore
 180 UNTILO
 190 END
 200 DEFPROCchars
 210 VDU23;8202;0;0;0;0;
 220 VDU23,224,24,60,126,255,24,24,24
,24
 230 VDU23,226,24,24,24,24,255,126,60
,24
 240 VDU23,225,24,24,60,60,126,126,25
5,255
 250 VDU23,227,24,24,24,24,24,24,24,2
4
 260 VDU23,228,0,24,60,60,126,126,255
,255
 270 VDU23,229,0,0,60,60,126,126,255,
255
 280 VDU23,230,0,0,0,60,126,126,255,2
55
 290 VDU23,231,0,0,0,0,126,126,255,25
5
 300 VDU23,232,0,0,0,0,0,126,255,255
 310 VDU23,233,0,0,0,0,0,0,255,255
 320 VDU23,233,0,0,0,0,0,0,0,255
 330 VDU23,234,129,66,132,16,64,130,1
,32
 340 T$="  "+CHR$225+"  "
 350 ENDPROC
 360 DEFPROCsetscores
 370 hiscore%=0:hiscore$="Nobbin"
 380 gotit%=0:drop%=0
 390 ENDPROC
 400 DEFPROCgamevars
 410 CLS
 420 VDU19,0,4;0;
 430 X%=RND(38)-1:Y%=RND(28)-1
 440 MX%=1:MY%=-1
 450 TX%=18:MTX%=2
 460 hit%=FALSE
 470 ENDPROC
 480 DEFPROCgame
 490 PRINTTAB(X%,Y%)"*"
 500 REPEAT
 510 COLOUR3:PRINTTAB(37,0);TIME DIV1
00:COLOUR1
 520 IF INKEY U% MY%=-1
 530 IF INKEY D% MY%=1
 540 IF INKEY L% MX%=-1
 550 IF INKEY R% MX%=1
 560 IF X%=39 MX%=-1:VDU7
 570 IF X%=0 MX%=1:VDU7
 580 IF Y%=29 MY%=-1:VDU7 ELSE IF Y%=
0 MY%=1:VDU7
 590 PRINTTAB(X%,Y%);" "
 600 X%=X%+MX%:Y%=Y%+MY%
 610 COLOUR2
 620 PRINTTAB(X%,Y%);CHR$(225+MY%)
 630 COLOUR1
 640 ti%=TIME+2:REPEATUNTILTIME>ti%
 650 IF TX%=34 MTX%=-2 ELSE IF TX%=0
MTX%=2
 660 TX%=TX%+MTX%
 670 PRINTTAB(TX%,30);T$
 680 IF INKEY F% AND MY%=1 PROCdrop
 690 UNTILhit%=TRUE OR TIME>6000
 700 ENDPROC
 710 DEFPROCdrop
```

```
➤
  720 drop%=drop%+1
  730 FORDD%=YY%+1 TO 29
  740 PRINTTAB(XX%,DD%);CHR$227:IF DD%>
(YY%+1) PRINTTAB(XX%,DD%-1);" "
  750 SOUND1,-15,200-(DD%*4),1
  760 NEXT
  770 PRINTTAB(XX%,29);" "
  780 IF XX%-2=TX% hit%=TRUE:PROCgotit
  790 ENDPROC
  800 DEFPROCgotit
  810 T%=TIME
  820 FORN%=228TO233
  830 PRINTTAB(TX%+2,30);CHR$N%
  840 COLOUR(RND(2)):PRINTTAB((TX%+RND
(3)),(26+RND(3)));CHR$234:COLOUR1
  850 SOUND0,-15,7,1
  860 ti%=TIME+10:REPEATUNTILTIME>ti%
  870 NEXT
  880 gotit%=gotit%+1
  890 TIME=T%
  900 ENDPROC
  910 DEFPROCscore
  920 CLS
  930 VDU19,3,6;0;:COLOUR3
  940 PRINTTAB(17,1)"SCORES"TAB(17,2)"
------"
  950 VDU28,1,30,38,4:COLOUR131:CLS:CO
LOUR0
  960 PRINT'"" You hit ";gotit%;" targ
ets."
  970 PRINT'"" You used ";drop%" shots
."
  980 score%=gotit%*1000-drop%*100
  990 PRINT'"" Your score is ";score%
 1000 *fx15,0
 1010 IF score%>hiscore% PRINT'"" A ne
w high score!":hiscore%=score%:INPUT''
" Enter your name ",hiscore$
 1020 hiscore$=LEFT$(hiscore$,7)
 1030 PRINT'"" The highest score is ";
hiscore%;" by ";hiscore$
 1040 INPUT'"" Change keys? (Y/N) ",k$
:IF k$="Y" PROCselectkeys
 1050 PRINT'"" Press space for next g
ame":REPEATUNTILGET=32
 1060 gotit%=0:drop%=0
 1070 VDU26:VDU20
 1080 ENDPROC
 1090 DEFPROCinstruct
 1100 VDU19,0,4;0;19,3,6;0;:COLOUR0
 1110 VDU28,1,30,38,1:COLOUR131:CLS
 1120 PRINTTAB(11,1)"THE GOT-IT GAME"T
AB(11,2)"----------------"
 1130 VDU28,2,29,37,5
 1140 PRINT"You have just a minute to
hit as"'"many targets as you can."''"C
hange the direction of your craft"'"wi
th:-"
 1150 PRINT'"Keys which you select."
 1160 PRINT''"Your craft will always m
ove in a"'"diagonal direction and will
 bounce"'"off the screen edges."
 1170 PRINT'"Use your chosen key to fi
re but"'"make sure you are moving down
."
 1180 PRINT'"You score 1000 for each t
arget you"'"hit but use 100 for each s
hot."
 1190 PRINT'"Press Space":REPEATUNTILG
ET=32
 1200 CLS:PROCselectkeys
 1210 PRINT'"Press space to start the
game."
 1220 REPEATUNTILINKEY-99
 1230 VDU26:VDU20:ENDPROC
 1240 DEFPROCselectkeys
 1250 CLS
 1260 PRINT''''"Please hit your key fo
r...."''
 1270 PRINT"left":G=GET:L%=G-44:PROCle
tter:L%=-letter%
 1280 PRINT"right":G=GET:L%=G-44:PROC
letter:R%=-letter%
 1290 PRINT"up":G=GET:L%=G-44:PROCLett
er:U%=-letter%
 1300 PRINT"down":G=GET:L%=G-44:PROCle
tter:D%=-letter%
 1310 PRINT"fire ":G=GET:L%=G-44:PROCl
etter:F%=-letter%
 1320 IF G=13 F%=-74:PRINT;"Return"
 1330 IF G=32 F%=-99:PRINT;"Space"
 1340 ENDPROC
 1350 DEFPROCletter
 1360 PRINTCHR$(G)
 1370 RESTORE1400
 1380 FORN%=0TO1%:READ letter%:NEXT
 1390 ENDPROC
 1400 DATA103,24,104,105,40,49,50,18,1
9,20,53,37,22,39,73,88,103,24,104,105,
40
 1410 DATA66,101,83,51,35,68,84,85,38,
70,71,87,102,86,55,56,17,52,82,36,54,1
00,34,67,69,98
```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**December 1989 issue:**
*Games:* Wishing Wells. *Reviews:* Ricochet, Play It Again Sam II, System 80, Superior Soccer, Sign Writer, Time Lines. *Features:* Ravenskull solution, American Suds map, Break key protector. *Utilities:* Word square solver, screen faser, calendar maker, extended renumber.

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# electron user

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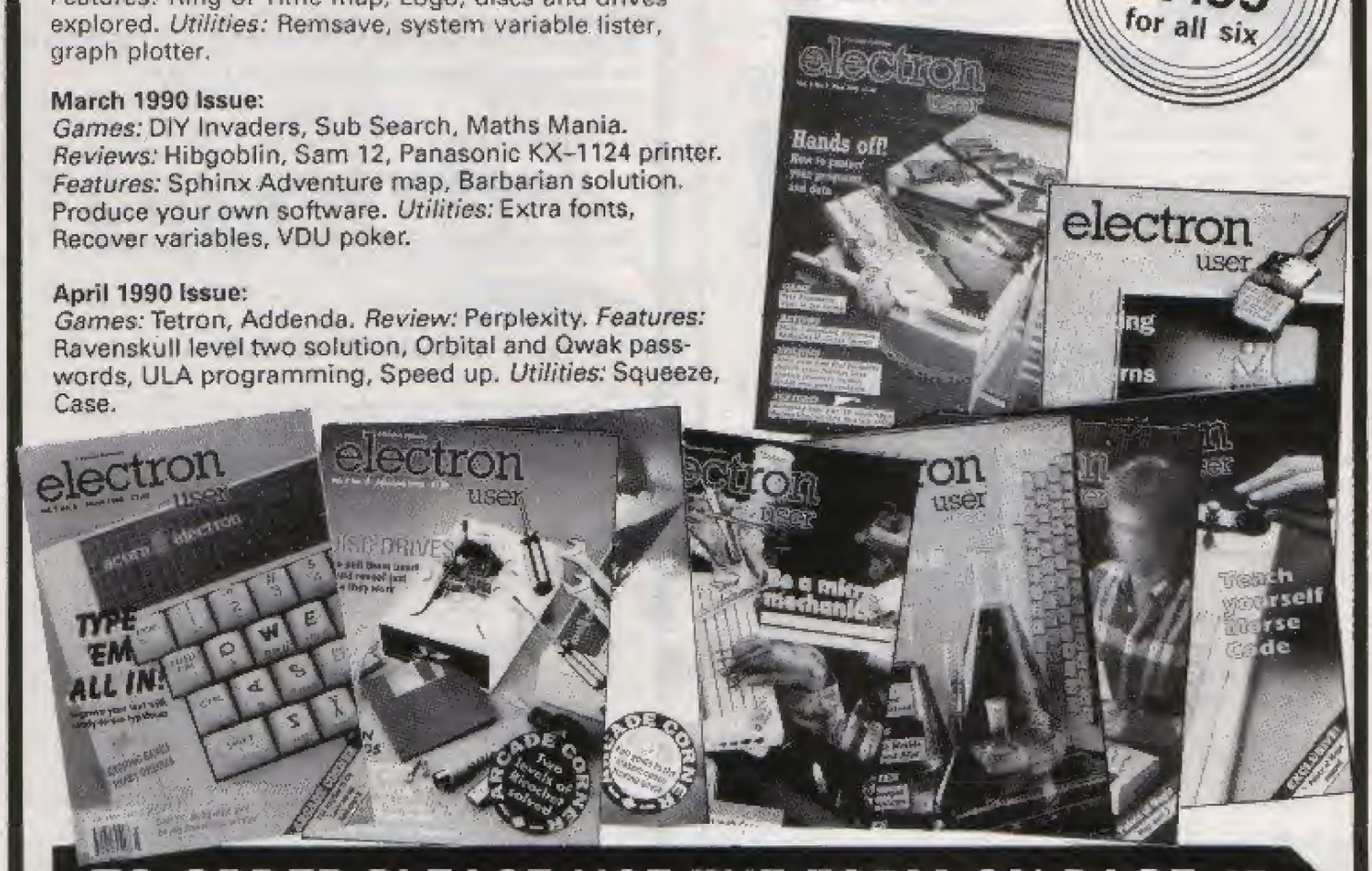


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# MICRO MESSAGES

## Jump without a return

*I HAVE owned an Electron for several years now and since having it I have bought and avidly perused your excellent magazine. I wish to thank the past legions of program contributors for helping an almost OAP to develop some competence in programming skills.*

*My machine is souped up with a Master Ram Board, 64k of sideways ram, Plus 1 with Pres Plus 2 rom, Plus 3 with AOFS and 1770 DFS and a 3.5in drive.*

*I make considerable use of it, including development of educational programs and using the ubiquitous View/Hyperdrive combination for composing teaching notes, worksheets and course examination papers.*

*Once they are complete, programs and files are tranferrred to the workplace BBC Micros using a cassette.*

*I now have a query: I notice that in some listings of assembler programs calls are made to the legal OS routines in the form of – say – JMP &FFF4 instead of the usual JSR &FFF4.*

*I understand that JSR finally returns the program to the next line after the JSR instruction, but that JMP normally does no return to that place.*

*When JMP is used with an OS routine, where does the program go to after the routine has been implemented?*– **A. E. Ashby, Knottingley, West Yorks.**

● The use of JMP in place of JSR was covered in Robert Charlton's article in the April issue but let's briefly recap. If:

```
JSR OSroutine
RTS
```

is used, the program jumps to the OS routine, returns to your subroutine and then returns to your main program. But if:

```
JMP OSroutine
```

is used, the program goes to it as if it was part of your own subroutine. The RTS at the end of the OS routine then passes control back to your main program.

## In search of a missing company

*I HAVE been unable to contact Slogger recently. I have tried phoning and writing to the last address that I had for them which was in Clifton, Bristol.*

*Please can you tell me if they are still trading and, if so, print their address or phone number. Alternatively, could you suggest an alternative source where I might obtain one of their expansion 2.0 roms?* – **Stephen Thomas, Yaton, Avon.**

We haven't heard from Slogger for some time now and, unfortunately, don't know of a source for their products.

## A vote for the top ten

*THANK you for providing an excellent and well balanced magazine: John Geraghty and Anthony Houghton's listings are excellent.*

*I think that the Electron software market is rather unbalanced. How many good racing games, beat-'em-ups and flight simulators are there? Hardly any. I advise any software company to produce any one of these. Crazee Rider is now over two years old and looks rather dated.*

*There are a few karate games, but only Way of the Exploding Fist and Yie Ar Kung Fu are any good. Combat Lynx is the only good flight simulator I've come across, and that looks rather dated as well, although it's good fun.*

*Most software houses churn out arcade adventures and shoot-'em-ups, which our collections are bursting with, so I commend Tynesoft for their original products.*

*Perhaps the other software companies should produce something new. I think that there should be a Top 10 of readers favourite games. Here is my vote:*

| | |
|---|---|
| 1 | Exile |
| 2 | Elite |
| 3 | Holed out |
| 4 | Firetrack |
| 5 | Impact |
| 6 | Skirmish |
| 7 | Last Ninja |
| 8 | Ricochet |
| 9 | Dunjunz |
| 10 | Plan B |

*I suggest that you get any of or all of these if you haven't already.*

*The review of Exile missed out so much: It didn't mention the excellent speech before the game loads, or the quite superb sound effects which are the best I've ever heard on any game for the Electron.*

*There are more than a 1,000 screens, and although the scrolling is jerky, once you get used to it it's not noticeable.*

*The graphics and animation are excellent too, but for me the game is my favourite because of the realism.*

*It comes as close to real life as any game I've seen, and this makes it the most*

➤

## Using old games after upgrading

*I HAVE had an Electron for five years and have also taken Electron User* for the same time.

*I have found your magazine the best for type-in programs and teaching how to program the micro.*

*However, my micro is now coming to an end of its use and has broken down several times.*

*It is becoming difficult to have repaired and new ones do not seem to be on the market.*

*I will now have to upgrade, but price is my control and I have thought about an Acorn Master although these seem to have been superceded by the Archimedes, Unfortunately this micro is too pricey for me.*

*Can you tell me if all my Electron programs, which are mostly from your magazine, will run on a Master and also if you produce a magazine suitable for that micro? All my programs are on tape.* – **Thomas Wilson, Woodley, Stockport.**

● Most of the programs published in *Electron User* will run on a Master or any other BBC Micro. However, some may run too fast and you may have to slow the program down.

This can be done by inserting delay loops into the program, for example:

```
time=TIME:REPEAT UNTIL TIME>time+100
```

Your current tape recorder and lead will work with a Master (but not a Master Compact which will not accept tape).

If you change micros – and even if you don't – you should read *The Micro User*. It's designed for the BBC Micro and Archimedes series but you'll find lots of information relevent to your Electron and many of the programs will also work on it.

# MICRO MESSAGES

➤

*playable I've ever played. I still haven't completed it afer a year of playing but I still go back to it to try and get further.*

*If you haven't got Exile, rush out and buy it or send off for your copy today. Don't be put off by the review. You won't be disappointed.*

*Keep up the good work, especially with the software reviews and Arcade Corner. I would also like to hear from any English speaking Electron users living in Holland.* – **Simon Tarry, The Hague, Holland.**

## The Electron still rules, OK?

*I RECEIVED an Electron as a Christmas present six years ago. When first bought, there were innumerable games and other sofware for it on shop shelves.*

*Now, sadly, here in Dumfries I can find nowhere that sells software for the Electron. All the tapes and discs now seem to be for Spectrum and Commodore computers. It seem that the only way to get software is by mail order.*

*Nearly all my school friends say I should get rid of my Electron and buy a Spectrum +2 or other similar micro. Even my computing teacher tells me – in the nicest possible way – that it is now becoming obsolete. But why should I get rid of it?*

*I have never had any problems with it – save a few loading errors – and my interest is increasing more and more now that software houses like the 4th Dimension and Superior are producing terrific games like White Magic and Repton and we are still able to obtain classics like Elite.*

*It is a great pity therefore to see such a versatile machine as the Electron being pushed out of the way by what I would describe as less adaptable and less versatile micros.*

*Keep up the good work on your fantastic magazine. May it continue well into the next century.* – **Callum Murray, Kirkton, Dumfries.**

## The cheapest may be the best

*PLEASE could you help me. I have had my Electron for some time, but my cassette recorder is now broken.*

*I have searched everywhere for another but am unable to find a shop that sells cassette recorders for the Electron. Please could you send me the name of a dealer who could help as every shop in my town sells only software or nothing for the Electron?* – **Mark Westrope, Harpenden, Herts.**

● Almost any tape recorder will work with your Electron – if you have a tape deck on your hi-fi, even that will probably work. However, we find that price seems to have very little influence on the loading/saving capabilities and often the more expensive models with lots of features are not as good as the cheap, mono ones.

A fairly cheap recorder, preferably with mic, ear and remote sockets, will suit your needs.

## Keep badgering for more games

*THANKS for your excellent magazine. I recently read in the December* Electron User *a letter from Simon Tarry about petitioning for more games. I would like to make the same point.*

*Please, even if you don't like games, write to Ocean (6 Central Street, Manchester M2 5NS) and ask for Robo-cop, New Zealand Story and Dragon Ninja. Also U.S. Gold (units 213 Holford Way, Holford, Birmingham) and ask for Strider and Forgotten Words.*

*The Spectrum is easily beaten by the BBC Micro and Electron and the CBM +4 is evenly matched. So please, please, please write a short letter to these companies.* – **A. Jenkin, Longlevens, Gloucester.**

## Protected programs don't copy

*I HAVE recently purchased a Pres plus 3 MKII with the Advanced Disc Toolkit rom fitted. There is a command *XFER which transfers files from Tape to DFS or ADFS.*

*It appers to sucessfully store files to ADFS disc even when the software is protected. However, when I try to reload these files from the disc I receive the* Bad Program *message or the keyboard locks up.*

*I have tried in vain to alter PAGE to &E00 but since most of my software relocates PAGE while running I have had no success whatsoever.*

*How do I solve this problem? Would the PRES Advanced Electron DFS E00 disc return my filing system to the same location as the tape filing system and hence cure it, or would I not achieve the desired result this way?*

*I would be very grateful for any comments or suggestions that you could make to help me as I am now lost.* – **M. T. Garatt, Crayford, Kent.**

Tape to disc transfer programs are designed to do just that. Once they are transfered, if they are not protected, they will run.

However, to prevent their games being illegally copied, most software houses make sure in the protection that if a program is copied in any way – including using a transfer program – it will not work.

## In search of the lost keys

*I WOULD like to type in Life from the February edition into my BBC Micro but I don't know which key to use for | in line 1400 and for _ in 690. Can you please enlighten me?* – **N. B. Hampson, Alsager, Staffs.**

● The character in line 1400 is the *bar* character – Press Shift with the right arrow key

## Looking for lost variables

*IN the June 1989 copy of* Electron User, *you published a Database program called The Yuppy Electron.*

*I have an Electron with +1 and +3 added. I have carefully copied this program, but when I run it I get the mesage* No such variable at line 1400. *I have checked and re-checked this line several times, and I am sure I have it is correct.*

*Could the problm lie elsewhere? Although you no longer answer personal programming mistakes, I wonder if you could make an exception in this case, as the distance between us makes things difficult.*

*I am, of course, an* Electron User *subscriber, by airmail, but we only recently received the February 1990 issue.* – **C.G. William, Auckland, New Zealand.**

● No such variable means that the micro has come across a variable that hasn't been defined. This is usually because of a typing error elsewhere, so unfortunately there's no option but for you to check the whole program.

To illustrate the point, look at the following, which gives no such variable in line 20 although *myname* is spelt wrongly in line 10.

```
10 INPUT"Type my name "myname
20 PRINT"My name is "myname
```

on an Electron or Shift+\ on a BBC Micro. The underscore character is a shifted down-arrow on an Electron and is on the same key as £ on a BBC Micro.

## Random thoughts of random distributions

*AS a first and final contribution to your columns, may I offer a short program which I think will answer the needs of R. Moore of Northumberland – Micro Messages, January 1990.*

*He was asking for a way to produce random numbers with a Gaussian probability distribution. You suggested the one in the Basic rom, which I understand to have rectangular distribution.*

*The following program uses the so-called Monte Carlo method, the variable Y determining whether to accept or reject X by comparing it with the value of the Gausssian probability density function.*

```
  10 INPUT "Mean = ";mu
  20 INPUT "Standard deviatio
n = ";sigma
  30 INPUT "Sample size = ";n
  40 FOR I = 1 TO n
  50   X=6*RND(1)-3
  60   Y=RND(1)
  70   IF Y > EXP(-X*X/2)/SQR
(2*PI) THEN 50
  80   X = mu +sigma*X
  90   PRINT X
 100 NEXT I
```

*This routine will not generate anything more than three standard deviations from the mean, but that is a pretty unlikely event anyway.* – **Simon Collins, Chelmsford, Essex.**

## In search of an Electron printer

*I HAVE bought* Electron User *for my daughter since November 1986 and have read with interest your letters. I have bought her a Plus 1 whereupon I had to buy her a new joystick which we find we cannot use on all the games she has acquired.*

*She would very much like to acquire a printer but where exactly do we look for one? PRES advertise in your magazine a Panasonic matrix but I have looked back through the magazine issues and find that other users of the Electron use lots of different ones.*

*What I would like to know is where do they find supplies of these printers?* – **B. McCullough, Bridgwater, Somerset.**

● All you need to look for is an Epson-compatible, parallel printer – most modern dot matrix ones fall into this category. You'll find plenty advertised in *The Micro User* or you could try a local dealer.

The lead to connect it to your Plus 1 is exactly the same as that used to connect it to a BBC Micro.

Then, for example, you can print from programs like word processors or list routines by pressing Control+B before typing LIST.

A final point is that if you want to output the screen a dump routine is needed. Several have previously been published in *Electron User*, but if you have a rom cartridge for your Plus 1, apart from one minor feature, Dumpout 3 from Watford Electronics will work with your Electron.

# MICRO MESSAGES

**ALL programs printed in this issue are exact reproductions of listings taken from running programs which have been thoroughly tested.**

**However, on the very rare occasions that mistakes may occur, corrections will be published as a matter of urgency. Should you encounter error messages when you type in a program they will almost certainly be the result of your own typing mistakes.**

**Unfortunately we can no longer answer personal programming queries concerning these mistakes. Of course, letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in the mail.**

## It's no trouble to transfer headers

*IN The March issue of* Electron User *you printed a letter from reader J. Darlington, who said he was having trouble transferring he HEADER programs from the monthly magazine tapes on to disc.*

*I noticed that, like me, he uses 5.25in discs so it may be that even though he has a disc system, PAGE in his machine is still at &E00 as it is in mine. If he is not sure about this it is easy to find out by typing:*

```
PRINT~PAGE
```

*If PAGE in his machine is indeed at &E00, h will be able to ransfer the HEADER program to disc very easily by carrying out the following procedure:-*

*First type:*

```
*TAPE
```

*followed by:*

```
LOAD "HEADER"
```

*When the HEADER program has loaded, look at the information on the screen to see what the length of the program was. In the case of the March tape it was 0A4F. Now carry on as follows. Type:*

```
*DISC
```

and then:

```
*SAVE HEADER 0E00 +0A4F
```

*This will save not only the progam but all the hidden data at the top too.*

*Now he will be able to CHAIN "HEADER" from the disc in the normal way and the program wil work correctly, loading any program he chooses.*

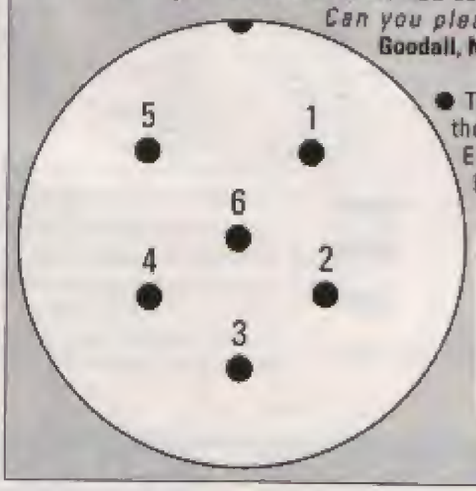
*There is no need for him to worry that line 40 in the program contains the *TAPE command, as this line is never executed if PAGE is at &E00.*

*The procedure described above can be used to transfer all the HEADER programs from tape to disc. The only thing that changes from month to month is the length you have to use in the *SAVE command.* – **Joan Barnard, Essex.**

## Connecting the red green and blue

*I HAVE an Acorn Electron and a Philips colour telavision with Scart/euro connector. I have been told that I can connect the Electron to the television by connecting the RGB output to the Scart/euro connector.*

*I know all the pin connections of the Scart/euro connector, but I don't know the pin connections of the RGB output on the Electron. Can you please help?* – **R.W. Goodall, Norwich, Norfolk.**




● The connections for the din socket on the Electron are as follows:

| | |
|---|---|
| 1 | Red |
| 2 | Green |
| 3 | Blue |
| 4 | Sync |
| 5 | 0v |
| 6 | +5v |

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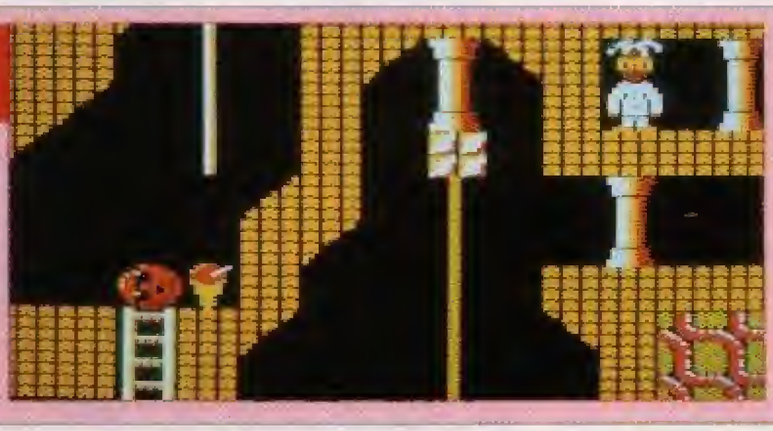

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The last action from The Fourth Dimension is BBC disc based only and is made up of a massive 100K of superb graphics and game code.

It is a sideways scrolling shoot'em up which features 8 levels of furious opponents and very varied and very detailed graphics. You fly a spaceship which can attain immense firepower - more lasers, a ram, gun droid and highly destructive missiles which are released from the top and bottom of your ship, then ignite and shoot forwards.

A 100K game of non-stop action

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## ARCADYPSE

Produced by Gordon Key for The Fourth Dimension. E-Type, Holed Out, Nevryon and Archipelagos have been Micro User or A Computer Chart Topping games and Apocalypse is sure to be another. Your spaceship is under attack from the Apocalypse and it's down to you to destroy it. Apocalypse is a must for your Archimedes shoot 'em up collection.

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Your opponents include beautifully detailed Porches, Lotuses, Audi Quattros etc. etc. BBC and Electron versions are due for release in early May.

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*"This is a superb game ... the tracks are fantastic" ... The Times, Dec'89*

*"For challenging races with a real sense of speed and fun, go for E-Type 3 ignition key." The Games Machine, Feb'90*

*"There's just one word to describe E-Type: Fantastic. Graphics 10, Value for Money 10." ... The Micro User, Dec'89*

*"The graphics in E-Type are really superb. E-Type in my opinion is probably the best game yet for the Arc." Risc User, Dec'89*

## HOLED OUT – 3D GOLF

Due to overwhelming public demand The 4th Dimension has now produced 2 volumes of extra courses for their superb 3D golf game Holed Out. Each volume contains 9 superbly designed brand new courses. These courses are a lot trickier than the 3 courses which are on the original Holed Out!

*"I play golf and this game is the closest thing I've seen to the real game on a computer" Archive, June '89*
*"I wouldn't have thought it possible to get a better simulation out of the beeb." B BC Acorn User, June '89.*
*"The 3D perspective graphics are stunning" Electron User GOLDEN GAME June '89*
*"Holed Out is great ... The game plays very well and the graphics are superb." Popular Computing Weekly, March 1989*
*"The best golf simulation I've ever seen on any Acorn machine." The Micro User, June '89*
*"The Electron version is brilliant - it's almost the same as playing at Gleneagles. Unreservedly recommended." A & B Computing Game of the Month, June '89*

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## U.I.M. (ULTRA INTELLIGENT MACHINE) The Fourth Dimension

Possibly the most exciting BBC release for a long time. U.I.M. is a massive 3D vector graphic action adventure set in the future. The greenhouse effect has melted the icecaps and all life now exists in hundreds of colonies under the sea. You must travel the oceans, completing missions, trading in currencies, commodities and shares in search of the U.I.M. There are many types of ship you will encounter in your highly manoeuvrable futuristic submarine and you must develop your weaponry and equipment to deal with the challenges you will face. U.I.M. is an opportunity to step into another world. It will fascinate you for weeks and possibly months to come.

U.I.M. is disc only and will run on BBC B or B+ with sideways RAM and Master Series Computers.

**The fully enhanced Archimedes version is also now available.**

*"Will I keep playing it the way I've played Elite for years? And the answer is yes. Graphics 10, Playability 10, Value for Money 10" The Micro User, Nov '89.*

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## TITLE & PUBLISHER

M = Master Compatible

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| Omega M | 4.95 | 5.95 | 6.95 |
| Clogger M | 4.95 | 4.99 | 6.95 |
| Zenon M | 4.95 | 4.99 | 6.99 |
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| Chase It Again Jnr 2 | 2.99 | 4.99 | |
| Chase It Again Jnr 3 | 2.99 | 6.95 | |
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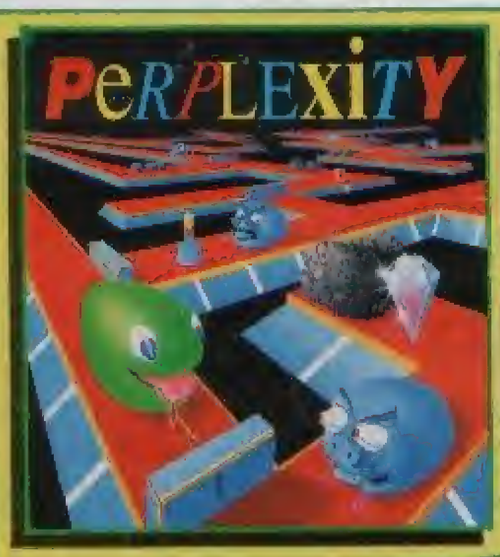

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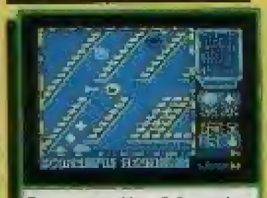
Beware the Monster

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### 3-Dimensional Strategy Game with Brilliant Graphics

PERPLEXITY consists of 16 increasingly difficult levels, each a puzzling maze with one of four different 3D background themes. Collect the diamonds by pushing together the boulders scattered about the maze and push the keys to the correct doors to open them.

But watch out for the monsters who will chase you around the maze. And watch out also for the 'mystery boulders', which may give you a bonus score or a magic potion, but may also reverse some or all of the movement controls...then you've really got problems!

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PERPLEXITY combines the best puzzling features of REPTON games with superb 3D graphics, to give a highly addictive and visually brilliant game. Are you ready to face the challenge?

(The Electron version has the same graphics as the BBC Micro version.)

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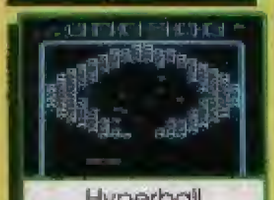
Barbarian II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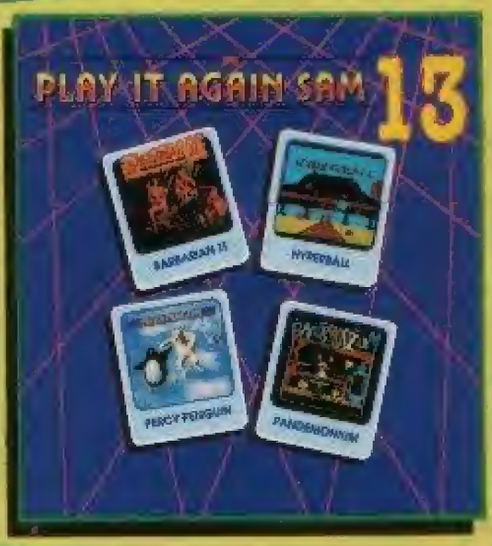


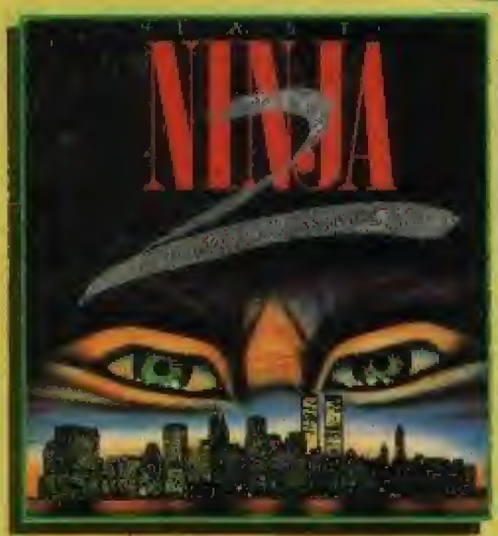

A Thug in the Cellar

Mugged on the Street

## LAST NINJA 2 - Back with a Vengeance!

Born in a time of peace, lived in a time of war: the shadow warrior returns. Leaping the abyss of time he comes to fulfil his destiny!

DATELINE: 1990 THE PLACE: Downtown New York
THE QUEST: To destroy the eternal evil.....Kunitoki!

Lots more fiendish adversaries, more colourful screens with superb graphics, a score-line, a timer... and lots and lots more exciting Ninja action. Are you ready for the thrills and skills of the Ninja in crime-filled Manhattan? Can you survive the six action-packed levels?

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(The screen pictures show the BBC Micro versions of the games.)

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